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# A HANDBOOK OF PORTUGUESE NYASALAND

*Compiled by the Geographical Section of the Naval Intelligence  
Division, Naval Staff, Admiralty*

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## NOTE

THE available sources of information on Portuguese Nyasaland—published information, reports, &c. (as detailed in the bibliographical note at end)—are for the most part scanty and, for the purposes of the present compilation, unsatisfactory. The same is true, to an enhanced degree, of the maps, for hardly any of the territory has been mapped with any approach to accuracy. The geographical descriptions and itineraries must therefore be used with caution, and especially as a basis for eliciting first-hand information locally. It is necessary to emphasize the fact that in the circumstances the information given must be far from complete, and that conditions may frequently have altered since the dates of the sources available. The Admiralty will be glad to receive corrections or additions.

The spelling of place-names follows as far as possible the usual English practice, but the names of *concelhos* and Portuguese posts are usually given in the Portuguese form.

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Special attention is drawn to the *Addendum*, p. 231.

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## CHAPTER I

### DESCRIPTIVE GEOGRAPHY

Situation—Area—Boundaries—General description—Coast.

#### SITUATION AND AREA

PORTUGUESE Nyasaland, or the territory of Cabo Delgado, which is administered by the chartered Companhia do Nyassa,<sup>1</sup> is the northernmost division of Portuguese East Africa. It is situated, approximately, between  $34^{\circ} 40'$  and  $40^{\circ} 40'$  E. long., and between  $10^{\circ} 39'$  and  $15^{\circ} 20'$  S. lat. Its area is sometimes stated to be 100,000 square miles, but this seems to be an overestimate; probably 73,000 square miles is nearer the truth.

#### BOUNDARIES

Portuguese Nyasaland is bounded on the north by the territory known as German East Africa, on the east by the Mozambique channel of the Indian Ocean, on the south by the Portuguese districts of Mozambique and Quelimane, and on the west by the British protectorate of Nyasaland, and by Lake Nyasa.

The northern frontier starts on the coast at Ras Lipuu, a little north of Cape Delgado, about  $10^{\circ} 40' 30''$  S., strikes inland to  $10^{\circ} 40'$  S., and follows that parallel west to about  $40^{\circ} 17'$  E. Here it turns north to  $10^{\circ} 39'$  S., and then bears W. by S. to within a mile or less from the right bank of the Rovuma river, with which it runs parallel to about  $10^{\circ} 43'$  S. This gave Germany a strip of territory along the right bank up to the point of the lowest ford across the Rovuma, which was thus included in her territory. The Rovuma itself then becomes the frontier all the way to a point within about 34 miles of the east shore of Lake Nyasa, at the junction

<sup>1</sup> This name is so spelt in the title of the Company, and in most Portuguese works.



of the river Msinje with the Rovuma. From this point it has been delimited westward to the lake, as described in Route 5. It was provided that islands in the lower Rovuma (east of  $38^{\circ} 8' \text{ E. long.}$ ) should be Portuguese, and those in the upper Rovuma German.

The southern frontier runs up the river Lurio from its mouth nearly to its head. This river is almost unknown. The frontier then turns W. by N. to a point on the east shore of Lake Shirwa or Kilwa. Here it becomes the boundary between Portuguese and British territory. It runs northward along the shore of Lake Shirwa and thence to the south-eastern corner of Lake Chiuta. It follows the eastern shore of that lake, and then strikes across it and continues north-westward to a point on the south-east shore of Lake Nyasa in  $13^{\circ} 30' \text{ S.}$  The Anglo-Portuguese frontier is marked by numbered beacons on the shores of the lakes and at intervals between them.

#### GENERAL DESCRIPTION

The territory, from the coast inland to Lake Nyasa, may be divided, broadly, into three natural regions or zones.

1. A low coastal zone extends inland from the sea for an average distance of perhaps 30 miles, though in parts it may be as wide as 60 miles; it is narrower in the south than in the north. It is gently undulating, and on the whole slopes very gradually upward.

2. Along the inner margin of the coastal zone there is as a rule a somewhat steeper slope up to the middle or plateau zone, which has an average elevation of about 1,500 ft. Its general level is commonly broken by short irregular ranges of hills and by remarkable isolated granite cones. The plateau is highest in the south-west of the territory, where the principal rivers (apart from the Rovuma) take their rise. These are the Lurio and the Lujenda (the ultimate sources of which are outside the confines of the territory), the Msalu and the Mtepwezi. The Lurio has been mentioned already as the southern boundary river. The Msalu and the

Mtepwezi are the two principal rivers whose courses lie wholly within the territory.

The Lujenda valley cuts athwart the whole territory from the south-west to the middle Rovuma in the north. It forms the natural boundary between the middle or plateau zone and

3. The highland zone, which extends westward to Lake Nyasa. High hills extend along the greater part of the Anglo-Portuguese frontier in the south-west, and from  $13^{\circ} 30'$  S. northward to the Rovuma there are at least three main ranges between the Lujenda basin and the lake, extending from south to north, and demarcating the valleys of the Luchulingo and the Msinje, southern tributaries of the Rovuma. The westernmost range rises so steeply and so close above the shore of Lake Nyasa that there are only short streams draining to the lake. The slope upward from the Lujenda basin is comparatively gradual, and the river receives a number of large tributaries from the western highlands. The highest summits in the highland zone are estimated to reach elevations between 5,000 and 6,000 ft. Lake Nyasa itself lies at an altitude of 1,565 ft.

### COAST

The coast varies in character, being alternately sandy, rocky, or fringed with mangrove swamps. Generally it is low, except along a stretch of about 25 miles north from Lurio Bay, and at certain other points, such as the bluff of North Point, north of the entrance to Pemba Bay, and the rocky northern shore of Tunghi Bay, which rises to heights of 80 to 200 ft. The more favourable parts of the coast are well wooded, and dotted with villages in coco-nut groves. The principal bays from north to south are Tunghi, Mayapa, Mazimbwa (Mocimboa), Mambe with Ibo Harbour, Mtepwezi (Montepuezi or Montepes), Porto Arimba, Pemba or Pomba Bay (one of the finest natural harbours on the African coast), and Lurio. The coast is generally fringed by coral reefs, which south of Pemba Bay extend not more than  $1\frac{1}{2}$  mile

off shore, but farther north the outer reefs lie 8–13 miles from the coast of the mainland, which is fringed with a chain of islands known collectively as the Kerimba Islands. These extend for 135 miles from Cape Delgado southward to Arimba Head. The islands number about thirty, apart from coral islets and drying shoals. They are generally low and wooded or grassy; few are inhabited, as on the majority fresh water is scarce or absent. Some eighteen or nineteen openings between the outer islands and reefs lead into a still greater number of secure ports or convenient anchorages for small craft. In these passes the water shoals from 100–200 fathoms to 20 fathoms or less within a mile, as the outer face of the reef falls abruptly.

The coast is more fully described on pp. 90–96.

*Currents.*—The trade drift of the South Indian Ocean, moving westward and meeting with the obstruction of Madagascar, divides in the vicinity of Mauritius, and sends one stream westward which strikes the African coast in the neighbourhood of Cape Delgado during the southern monsoon, though during the northern monsoon it is a degree or more farther north. Here it divides again southward and northward. The southward branch flows along the coast through the Mozambique Channel, with a velocity varying from 36 to 72 or even 100 miles in 24 hours during the northern monsoon, but decreasing during the southern monsoon until it is sometimes inappreciable. It is strongest at 60–80 miles off shore. The tide, again, has a considerable influence on the current closer in shore (not more than 10 miles from the coast), alternately strengthening and retarding it. On the whole, therefore, the varying influences at work in the Mozambique Channel render the currents rather uncertain.

## CHAPTER II

### PHYSICAL GEOGRAPHY

The Natural Regions : Surface and Relief of (1) the Coastal Zone, (2) the Middle or Plateau Zone, (3) the Highland Zone—Rivers—Forests—Climatic conditions—Earthquakes—Local Time—Magnetic Variation—Fauna—Geological formation.

#### THE NATURAL REGIONS : SURFACE AND RELIEF

SOME fuller description will now be given of the three natural regions into which, as has been stated, Portuguese Nyasaland is divided. But it must be borne in mind that practically none of the territory has been mapped with any approach to accuracy, excepting the coast, and that considerable areas are hardly known to Europeans.

##### (1) *The Coastal Zone*

The coastal zone has in general a gently undulating surface. As suggested by the description of the coast itself, however, the country is by no means uniform in character. It is broken occasionally by escarpments, by abrupt isolated rocky hills of the character commonly found farther inland, or (as in the district south of the Msalu) by gentler eminences capped by the pebbles of old marine or river deposits.

Between the Rovuma and the Lurio the coastal zone is intersected by the lower courses of four major rivers—the Msalu, Mtepezezi, Mwangidi (which enters Pemba Bay), and Mkaluma—and by a large number of smaller watercourses. In some parts small lakes are not infrequent, as for example to the north-east of the Mavia plateau in the north, and on and about the lower course of the Mtepezezi (Lake Biribezi and others). Here and there, too, patches of marsh occur, of not inconsiderable size, as inland from the head of Mazimbwa

Bay, and about the lower course of the Msalu. Part of the plain here is permanently swampy, and may be submerged to a depth of 4 ft. 6 in. in the wet season.

The vegetation of the coastal zone varies with the soil. Much of the coastal territory is very fertile. North of the Msalu the country is described as pleasant, and well cultivated in open patches among thin forest. South of the same river is a rolling sandy district, broken by valleys which have sometimes steep sides, and flat, fertile bottoms which are farmed by the natives. Luxuriant vegetation is found between Ibo Harbour and Pemba Bay, where African teak flourishes in the Ehari forest, and in the district round the bay itself. South, towards the Lurio, thick woods of palms and other trees are described, alternating with long level plains, almost treeless.

### (2) *The Middle or Plateau Zone*

South of the lower course of the Rovuma is the Mavia country, a southward continuation of the Makonde plateau north of the Rovuma, and similar in character to it. It rises steeply from the valley of the Rovuma, and on its western side between the Rovuma and the Msalu, but slopes gradually towards the coast. It appears to be mostly a country of tangled bush, sparsely inhabited, with few watercourses and short of water in the dry season, though towards the coast there are many small lakes and ponds. Country of this character extends southward to the Msalu, and probably beyond, though little is known of the territory between the Msalu and the Mtepwezi.

South of the Mtepwezi, however, better information is available, as the regular routes from Ibo and Pemba Bay strike across this part of the country, converging at or near Meza. A survey for a proposed railway from Pemba Bay to Lake Nyasa was carried up the valley of the Mwangidi from the bay, and on this line, which coincides pretty closely with the trade route (see Route 30), the sharp rise from the coastal zone up to the plateau begins about 17 miles from the bay, or 34 from

Port Amelia. On either side of the Mwagidi valley typical high granite peaks appear, such as Mount Podo to the north, and the Makula hills to the south, in which Jogola rises to an elevation estimated at 2,000 ft. A succession of such hills is met with at intervals all the way to the Lujenda. Their sides are often precipitous, while they are of varied and sometimes fantastic form. Thus a writer following this route refers to the 'lion couchant' of Maramano and the square, precipitous, table-topped mass of Mekuti in the Medo district, the gabled summit of Mt. Makwa, probably over 3,000 ft. high, to the south of Mwalia, the isolated double cone of Cherundu, rising 1,000 ft. from the plain of the upper Msalu, and the 'marvellous obelisk' of Manjera in the Chengwari hills beyond the Msalu.

These hills as a rule carry only sparse vegetation where the slopes are not too steep, and they break the monotony of the forest of stunted trees and undergrowth which covers the greater part of the country and restricts the view. The hills are naturally sometimes difficult to ascend, though, standing singly as they do, they offer no obstacle to communications.

In addition to these isolated hills, however, the two principal river systems of the plateau region—those of the Lujenda and Msalu—appear to be separated by more or less well-marked ranges of hills rising above the general plateau-level. The watershed east of the lower Lujenda is formed by hills, such as the Mkanje range, which appear to lie closer to the Lujenda than to the Msalu, so that the latter receives the longer tributaries in this region. Farther south, where the valley of the Lujenda (followed up stream) turns from a direction nearly south to a direction about west-south-west, the river receives some considerable tributaries on the right bank. Little is known of these, excepting the Rariko, but they collect their waters from the hills which bound the upper Msalu valley pretty closely on its north-west side, such as the Mkukutuku, Kisanga, Chawo, and Chengwari ranges.

Such accounts as exist of these hills indicate routes passing over broken country, but the ranges do not form a continuous

serious obstacle. Thus the Pemba Bay-Nyasa route, between the Msalu valley and the Lujenda at Mtarika, passes through a definitely hilly district on the watershed between the two basins. It reaches an altitude, however, little exceeding 2,000 ft., between the Kisanga hills to north and the Chawo hills to south. The hills themselves rise in short rocky ranges with fantastic irregular crests and peaks, having a general elevation of perhaps 2,700-3,000 ft., with summits occasionally of 3,500 ft. or more.

Farther south, very little is known of the country between the headwaters of the Msalu, the Rariko, and other streams of the Lujenda basin, and the basin of the Lurio (compare the general note numbered Routes 33 in the section of Itineraries), but the railway surveyors in 1912 thought it probable that the high plateau on the watershed between these basins would offer an easier east-and-west route than that already indicated; and detailed in Route 30.

In the extreme south-west the territory includes the eastern shores of Lakes Amaramba and Chiuta, which are drained by the Lujenda, and part of the eastern shore of Lake Shirwa or Kilwa, which has no outlet, being separated by a low, narrow, wooded ridge from Lake Chiuta to the north. In the district east of Lake Amaramba, isolated hills rise from a level or gently undulating surface of open plains (*dambo*), and form the only conspicuous features. Some are mere knolls; some, such as the Namwero and others in the neighbourhood of Kwamba, form short ranges rising to heights of 800-1,200 ft. above the general level (which is here between 1,700 and 2,000 ft. or more). Others, again, rise to greater elevations; indeed, the bold precipitous mass of Mt. Mtungwe, north of the lower course of the Mtamkulu (a left-bank tributary of the Lurio) has been estimated, but doubtfully, to reach 9,000 ft. Farther south, a chain of hills lies east of Lake Chiuta, and the land slopes gently upward from its swampy shore, and is lightly forested. To the east of Lake Shirwa, again, there are hills rising to no great height above the general level; between them and the lake there is

a flat tract 10–12 miles wide, through which a few streams find sluggish courses. One range of these hills, under the name of Luasi, extends in a general north-easterly direction, and in it are the sources of the Lurio river (see p. 24). For some further description of this part of the territory see Routes 39, 40.

### (3) *The Highland Zone*

West of the Lujenda the plateau rises gradually from an elevation of 1,100–1,400 ft. to 3,500–6,500 ft. in the Nyasa mountains. The general direction of its slope is from west to east and from south to north, but the greatest elevations seem to be found in the north-west frontier above the lake, and in the centre of the country near the sources of the Msinje.

The Nyasa mountains form a continuous chain along the lake, from the German frontier to Mt. Mangoche. Where they first enter Portuguese territory in the north they are about 6,000 ft. high and approach the lake shore closely, but about 15 miles south of the frontier they become lower and leave a narrow coastal strip along the lake. There is an easy ascent from the lake to the plateau up the valley of the Kobwe river, and another south of Mtengula, where the mountains rise about 3,000 ft. above the lake. From 13° 30' S. lat. the British-Portuguese frontier follows the mountains, which form a barrier above the south-eastern arm of the lake which is only broken near Luangwa. South of Mt. Mangoche (5,450 ft.), on the British side of the frontier, the hills are lower and much broken.

The hills are drained to the north by the Luchulingo and the Msinje, both large rivers flowing into the Rovuma, and by a number of other tributaries of which the Usanyando is the most important.

The valley of the Luchulingo is defined by the Msenga hills and Mt. Ichumundo to the west and the Yao (Ajawa) hills on the east. The valley narrows as it approaches the Rovuma, and the hills on both sides rise close above the confluence. To the south of the Msenga hills there is an



important group of limestone hills near the source of the Msinje which rise to more than 6,000 ft. at Mt. Njila. East of the river Usanyando the Wizulu range divides the watershed of the Rovuma from that of the Lujenda, and farther east again there are the Mkula hills.

The southern and eastern part of the mountain region is drained by numerous tributaries of the Lujenda, such as the Luatize, Luangwa, Luambala, Luchimwa, and Mandimba. South of the Luambala the country becomes very mountainous, but there is an absence of defined ranges, apart from the Lisemba hills to the west of Lake Amaramba.

Throughout the whole region there are numerous isolated hills, sometimes rising to a considerable elevation above the surrounding plateau. These were formerly, and still are to some extent, the centres of population and the residences of the chiefs. Such are Chisindo and Chiwegulu in the Msinje valley, the imposing double peak of Unangu (about 5,000 ft.), and the great semicircular mass of Mtonya.

A great part of the country consists of high-lying plains or rolling uplands known as *lichenga*, intersected by numerous streams and small rivers. This is especially characteristic of the country NE. of Mwembe (Fort Valadim) and of the tract between Unangu and Mtonya.

Every traveller has remarked on the fertility of the country. Major Stevenson Hamilton in 1908 stated that some of the valleys in the Nyasa Mts. lying between 3,000–4,000 ft. were among the most fertile and the best watered he had seen in Africa. The soil is well cultivated, especially in the plain of Mwembe, and supports a large population, and irrigation is practised in many districts.

The coast of the lake, lying as it does some 2,000–4,000 ft. lower than the highlands which border it, has its own characteristics of climate and vegetation. It is an extremely narrow strip with a large population (Nyasa and Yao) which lives by the cultivation of maize, cassava, millet, &c., and by fishing. The rivers that flow into the lake from the Nyasa Mts. have very short courses and are of little importance,

though they may be a serious obstacle to travelling in the rains.

The altitude of Lake Nyasa is 1,565 ft. The lake is about 360 miles long and from 15 to 50 miles wide. The greatest known depth is 386 fathoms. The water is fresh and drinkable, but is liable to contamination near the shore.

### RIVERS

As already shown, the principal rivers are five in number : (1) the northern frontier-river, the Rovuma ; (2) its principal tributary, the Lujenda ; (3) the Msalu ; (4) the Mtepezezi ; (5) the southern frontier-river, the Lurio.

On the whole, the territory is well watered, for in addition to the above large rivers there are very many smaller streams, of which a considerable proportion are perennial, or retain surface-pools in the dry season, or at least yield water a short distance below the surface of their sandy beds. Nevertheless, there are some districts which are short of water during, at any rate, the later part of the dry season.

An authority who travelled from Pemba Bay to Lake Nyasa in July–August 1908 states that the perennial streams seen by him at this, the middle of the dry season, ‘are of sluggish current, with sandy or muddy beds, while the forest as a rule grows close down to the banks, which are clean cut and well defined, and we saw none of those extensive reed-beds which are so marked a feature of many rivers in other parts of Africa. I am inclined to believe, from the general appearance of the banks, that the rise of the water during the wet season is pretty constant, and that there are few or no abnormal floods.’ Lakes and permanent ‘pans’ of water are not met with in this part of the country. ‘In places, especially among the Kisanga hills, there is a good deal of swampy ground, which probably in the wet season is covered with several inches of water, but these marshy tracts are nowhere more than a few acres in extent.’

Broadly speaking, the highland region of the west is the

best watered of the three zones into which the territory has been divided. There are here many streams (but by no means all) which have a perennial flow of very good water. Nevertheless it is persistently stated that the Lake Nyasa region is undergoing a gradual process of desiccation. During the rainy season the number of torrents and marshes in the plains and valleys make travelling difficult.

### *The Rovuma*

The Rovuma, a perennial river, flows into the sea at Rovuma Bay through a widely branched delta which is outside Portuguese territory. Some account of the mouth and of the lower course of the river will be found in Route 1. Above the delta it flows for a great distance through a flat scrub-covered valley sharply demarcated by the steep slopes of the Makonde and Mavia plateaux to north and south. It receives in this part of its course a number of small tributaries, of which a few widen into small lakes (called by the Portuguese *esponjas*) just before joining the main river—Lake Chidya near the left bank, Lakes Nangadi and Lidede near the right, and others. In the dry season this part of the river may be crossed at fords, but in the wet season the current is very swift, and many rocks and rapids add to the difficulty of crossing. It is estimated that in the rains the river usually rises some 18 ft. above its dry-season level. Along the upper part of this section of the Rovuma and along the lower Lujenda the crystalline rocks have only a thin covering of soil, and the forest is not heavy, so that the water runs off fairly quickly in the rains, and fluctuations in the level of the river are rapid.

Some sixty miles below the Lujenda confluence the steep slopes of the plateau to north and south fall away from the immediate neighbourhood of the Rovuma, and a few tributaries of not inconsiderable length join the river on both banks. The Lujenda itself, the principal affluent of the Rovuma, is described in a separate section below.

The fall of the Rovuma increases rather rapidly in this section as the valley is ascended, until, some twenty miles below the confluence of the Lujenda, the river divides into several branches, and forms a series of cataracts called the Marumba, Upinde, or Peters Falls.

Above the Lujenda confluence the valley is generally of no great width. A narrow, fertile belt of alluvial soil is met with close along the banks, and this is thickly wooded, or settled and cultivated at intervals by the natives, who also inhabit the small green islands which occur here and there in chains along the course of the river. Above the river-side strip of alluvium are slopes of typical 'park land', broken at intervals (especially south of the river ?) by bold rocky hills.

Between 25 and 40 miles above the Lujenda confluence the Rovuma receives two of its principal northern tributaries, the Limasule and Mohezi, of which the Mohezi is difficult to cross in the wet season, and always contains water, whereas the Limasule (apart from pools in its rocky bed) and the many other northern tributaries are not difficult to cross in the wet season, and do not contain running water in the dry season. But water can always be found in their beds by digging.

The width of the Rovuma in this section is generally between 150 and 250 yds. But about 45 miles above the Lujenda confluence it passes through a chasm between abrupt hills on either side, not more than 8-10 yds. across, beyond which the river resumes the general character previously described. Above the chasm are the Sunda rapids, and a long chain of islands, while the rocky reefs which at intervals strike across the river-bed hold up the water above them in a succession of long, still and deep reaches.

The district about the confluence of the Sasawara from the north (Routes 4, 5) appears to be more than usually fertile and populous. Below this river there is again in the Rovuma a chain of settled, cultivated islands. The Rovuma in this locality receives three considerable tributaries from the south—the Usanyando, Majuni, and Luchulingo. Little is

known of the two first, which collect their waters from the highlands of Wizulu and Ajawa, but they probably contain water throughout the year. It seems certain that the Luchulingo does so; it is a much longer stream, draining a valley between the Ajawa and Msenga hills. Some description of it is given in Route 23.

Near the mouth of the Sasawara the Bandara or Kisungule rapids break up the Rovuma into many channels. Above this, as far as the river borders Portuguese territory, it is very little known, as no routes appear to lie along it, or even, for the most part, near it. But it seems to be a rapid stream, generally 70–80 yds. wide, with a large volume of water; it can only be forded at a few places (for example near Kimbanda hill; see Route 5, mile 62), but it is said that boats can be obtained at many places, and there is abundance of timber. At the point where the Portuguese frontier leaves the river and runs west to Lake Nyasa, the Rovuma receives its uppermost tributary from the south; this is the Msinje, which, like the Luchulingo, drains a long valley between ranges of the western highlands—the Msenga hills on the east, and on the west the range bordering Lake Nyasa.

The Rovuma valley now turns nearly north, leaving Portuguese territory. Above the confluence of the Msinje, though of no great width, it is still a powerful stream and unfordable at all seasons, except perhaps for some short stretches in the upper reaches. The source is in the Matogoro hills, not far from Songea.

### *The Lujenda*

The Lujenda (Lugenda, Lienda) at its confluence with the Rovuma carries as great a volume of water as that river, if not greater, and Livingstone states that it should be regarded as the parent stream. Its bed at the confluence 'is about a mile wide, and at the point where it receives its waters from the Lake Amaramba it is some 80 yds. But this is full of water only during the wet season. At other times the

river [which flows perennially] is fordable at many places. Islands, beautifully wooded, are scattered all the way up the river, some of which are three or four miles in length. They are not submerged during the wet season, and therefore they form the permanent homes of the people [who inhabit] little clusters of rather small huts enclosed by reed fences.' The above account is quoted from that by J. T. Last, whose journey in 1885-6 up the Lujenda valley 'was, with the exception of a break here and there, through a long string of gardens'.

The Lujenda, like the Rovuma, has rapids at intervals, and is not navigable for any considerable distance. The most frequented routes lie along or near the right bank, and by far the most important crossing-point is at Mtarika, about midway in the course of the river through the territory. The river receives a large number of tributaries on both banks throughout its course; many of these dry in the dry season, but some of the larger are perennial. In the wet season many are deep, rapid, and unfordable near their confluences with the Lujenda. (See Routes 19, 36, where some further description of the valley will be found; also Routes 30, 34.)

The Lujenda rises in Lake Amaramba in the south-west of Portuguese Nyasaland. This lake is connected with Lake Chiuta to the south, but the name of Lujenda is not applied above the outflow from Lake Amaramba. The lake has little marsh along its shores, but the connexion to the south with Chiuta, and Chiuta itself, are bordered by swampy reed-beds. Lake Chiuta, indeed, at the end of the dry season, is mainly a great swamp, with sheets of clear water at intervals, dense reed-beds, and some islands; in the wet season there is more open water, and the lake covers a considerably extended area.

### *The Msalu*

The Msalu or Marari rises in the hills north of the Lurio basin, about 13° 40' S., and flows with a course roughly parallel to that of the Lujenda-Rovuma to its mouth, about

11° 15' S. Considerable parts of its course are almost or wholly unknown. About the point where the Pemba Bay-Lake Nyasa route crosses it, the description quoted on p. 19 applies to it, and some further reference will be found in Route 30 at mile 201. Probably over much of the course the bed carries surface water throughout the dry season, and in some parts even flowing water. But at the point where Route 18 crosses it (considerably below the crossing of Route 30) the bed of gravelly sand has been found nearly dry in July. Again, at no very great distance above the mouth (some 15-20 miles) the sandy bed has been seen dry, the water-level being about 9 ft. below the surface. The course is extremely sinuous towards the mouth, and there are marshes, and inundations in the wet season. Tidal influence is felt only some 3-4 miles up the river. The river can be entered by boats drawing 2 ft. at low water.

### *Other Rivers*

There is nothing to add to what is said above, and in the section of Itineraries, concerning the rivers Mtepwezi, Mwagidi, and Mkaluma. None of these flows perennially throughout.

The Lurio or Luli, as has been stated, is very little known, but it appears to be the principal river on the East African coast between the Zambezi and the Lujenda-Rovuma. It rises in the Luasi hills on the eastern borders of Lake Shirwa, and has a perennial course of some 400 miles to the sea. It receives its principal tributaries from the south, in Mozambique district. Above Vatiwa, about 14° 22' S., 37° 28' E., it divides into six channels and forms heavy rapids over a bar of hard granitic rock. Lower down it flows with a circuitous course, so far as is known, through a broad thickly wooded valley alternating with bare rocky gorges, until towards the mouth it broadens over a wide sandy and muddy bed which, in the dry season, may be crossed on foot.

## FORESTS

By far the greater part of the territory is forested, but the timber is not as a rule heavy. In the coastal zone the vegetation is generally luxuriant. Mangrove swamps occur at intervals along the coast (compare p. 94 seq.). Elsewhere euphorbias, kigelias, baobabs and wild date and other palms flourish, and the caucho, guava, and mango have been established. In the Ehari forest between Ibo and Pemba Bay fine African teak, alternating with bamboos, dwarf ironwood and occasional mahoganies and ebonies, are found. In the plateau zone the trees are generally stunted, especially in drier districts like the Mavia plateau (except along its edge above the Rovuma), and of little use for other purposes than fuel, although along the rivers there is often magnificent timber. In the south-west, between the Lurio and upper Lujenda, the trees are described as generally from 1 ft. 6 in. to 3 ft. in diameter, and 10-35 ft. high, excepting the larger trees along streams. One authority, following the Pemba Bay-Lake Nyasa route, remarks upon the 'apparently total absence of thorn acacias'. Typical genera here are the long-leaved *Rhus*, *Eugenia*, fig, *afzelia*, and creepers of the genus *Combretum*, while the *Landolphia* and other rubber-yielding vines and trees occur in many parts. In certain localities the *makruse* or African mahogany grows to a fair size. Ebonies are abundant, but they are usually gnarled and small. The Rovuma valley and the highland zone are generally wooded. The forest is mostly low and thin, often little more than scrub, but on the mountains woods of true forest trees are to be found. Livingstone described the vegetation of the upper Luambala basin as resembling that of Bechuanaland, with grass and trees of good size. In the lake districts many of the trees are deciduous, shedding their leaves in the coldest months, June and July; in September and October foliage begins to reappear, and perennial plants begin to spring in November.

Undergrowth appears to vary in different parts, but thick



bushes, creepers, and high grass are frequently mentioned as obstacles by travellers, and progress is slow where paths are not regularly cleared. Much grass and undergrowth are burnt off, and much timber is destroyed, in the more populous districts where the natives clear successive areas for cultivation.

Reference to the economic aspects of forest and other vegetable products will be found on p. 65 seq.

### CLIMATIC CONDITIONS

Precise information respecting the climate is meagre. Northern and southern monsoons blow with fair regularity on the coast, the former from September, the latter from the middle of April. The seasons are in general two : hot and wet, December to April ; dry and less hot, May to September. October and November are warm and, speaking generally, dry. Sometimes the rains do not begin to fall heavily, if at all, before the end of January.

#### *Climate of the Coastal Zone*

Records for this division are in greater detail than for the rest of the territory, but they come from two stations only, Palma and Ibo. The latter lies nearly in  $12^{\circ} 23'$  S. lat.,  $40^{\circ} 37'$  E. long., the former farther north at the head of Tunghi Bay (lat. approximately  $10^{\circ} 45'$  S.). Both have an altitude of some 15 ft. Only one year's figures are available for Palma, those of 1910, which refer to rainfall only, besides a few particulars for March and April 1911 ; at Ibo more detailed observations are given for 1909-10.

*Rainfall.*—The rainfall at Palma in 1910 was 34.5 in., and 13 in. fell in April alone. January (7.25 in.) and December (4.5 in.) were the next wettest months. The heaviest falls in 24 hours were recorded in January (3.36 in.) and April (3.49 in.).

At Ibo the total precipitation for the two years amounted to 30.73 and 31.56 in. respectively. The wettest month for

the period was April (10.87 in.) ; February (9.76 in.), January (6.39 in.), and March (6.56 in.) following. With the exception of June, at neither station does the rainfall from May to November inclusive exceed one inch each month. It may be said that January and April are the wettest months of the year, closely followed by February, March, and December.

*Temperature.*—The mean temperature chart for Ibo shows variations analogous, month by month, with the variations in rainfall, except in November. Ibo has a mean temperature of 78° F., the hottest months being January (82.8°), February (82.2°), March (81.7°), November (80.4°), and December (82°). July has the coolest mean temperature (74°). The figures for Palma, so far as they exist, are in close agreement. In March and April mean temperatures of 83° and 80.6° compare with 81.8° and 79.5° for the more southerly station. The absolute maximum at Ibo is 98.6° in January, 97.2° in February. In March and April the respective absolute maximum readings are, at Ibo, 95.7°, 93°; at Palma 95° and 86°. Absolute minima fall in July, 58° and 56.8° being registered respectively in the two years. The lowest figure for Palma (April 1911) of 68° compares with 64° at Ibo for the same month. At Ibo the mean daily maximum temperature is over 90° during January, February, and March, round about this figure in November and December, and from 85° to 88° during the remaining months of the year. The mean daily minimum is about 65° in April to October inclusive, and about 73° in the hotter months. In general it will be seen that with the exception of November, which is hot and dry, the months of greatest rainfall on the coast are also those of highest temperature.

*Humidity.*—The mean relative humidity is 82½ per cent. As is to be expected, October and November are the driest months with a relative humidity of 73 to 75 per cent. From December (80 to 83 per cent.) the humidity increases (January 87 per cent., February 88 per cent., March 87 to 90 per cent.) as the rainy season proceeds ; it gradually falls from 84 per cent. to 73 per cent. during the months of May to November.

Much of the unhealthiness and enervating effect of the coastal climate is due to this constant high humidity, and even in November when the air is driest the heat is said to be felt severely.

*Winds.*—The coast belt, as already mentioned, is in a region of north and south monsoons, the period of the former corresponding with the rainy, that of the latter with the dry season. There is a daily variation in direction and force. In the early mornings the prevailing winds are from the south-west from March to October inclusive; in the remaining months northerly, north-easterly, and north-westerly winds alternate. During the day and at evening the general direction from April to September is south, while easterly winds alternating with north-east prevail in the other months of the year. The afternoon winds are generally of greater force than the morning; it is during the period of the north monsoon that both more frequent calms and higher winds are experienced. A force of 6 (in the Beaufort scale) may, however, be recorded in any month, especially in the latter part of the day. Fresh breezes from the south-west occur from March to May, and in November, early in the morning. Cyclones (such as that at Pemba Bay in 1914) occur occasionally along the coast, but they appear to be less frequent than farther south in the Mozambique channel. During the two years examined for Ibo the strongest wind recorded was from the north-west with a force of 7, in the early morning of a day in September.

### *Climate of the Plateau and Highlands*

For these regions there are very few records.

*Rainfall* is not so heavy over the middle plateau as on the coast, but it increases again in the western highlands. There are a few returns for the mission stations at Likoma Island in Lake Nyasa (alt. about 1,570 ft.) and Mtonya in the highlands. The average rainfall at Likoma (13 years) is about 40 in. per annum, and in the hills not much more,

though the seasons seem to vary considerably in this respect. The wettest months are February, with a mean rainfall of 11 in., January (10·35 in.), March (7·88 in.), and December (6·75 in.). The greatest fall in any one month at Likoma was 22·96 in. in February. Rain is practically unknown in July and August; very little (up to half an inch) falls in May, June, September, and October. At Mtonya, again, a fall of 11·79 in. is recorded for November, while in another year only 1·79 in. was precipitated in the same month. The highest figure for a single month at Mtonya is 15·34 in. in December 1904, but falls of 7–10 in. are frequently measured in January and February.

*Temperature.*—The valley of the Rovuma river may probably be compared with the coastal belt, except in the higher reaches, far from the coast, when cool winds from the south-west may be met with. Over the middle plateau generally the effects of the monsoon are less perceptibly felt than on the coast; and the weather is locally affected by the physical features of the country. Thus September to November are felt as the hottest months, but the heat is not excessive for the latitude. It is said that during eight months of the year the evenings and mornings are cool and pleasant, the temperature varying from 65° to 70° F. The warmest part of the day (11.30 a.m. to 3 p.m.) in the cooler season means a temperature of 80° to 85°; in the hot season some 10° higher. But at night in the hot season the thermometer falls below 80°, to an extent depending on altitude and distance from the sea. At Mtonya in the hill country (altitude about 3,000–4,000 ft.) from June to August the highest temperature is about 75° and the lowest 46°. In November at the same hill station an absolute maximum of 90° is recorded, and an absolute minimum of 38° in June. Frost, even in the western highlands, is practically unknown, but during the cooler months (April to July) a temperature of under 60° is felt in the afternoons and nights in this region. As to cold elsewhere, in the little known Mawa region for instance, it is very probable that since south-westerly winds

are prevalent it may become even unpleasantly cool in the dry season with a cloudy sky.

Heat is most oppressive just before and during the early rains, that is to say, in November, or as late as January. The latter part of January, especially midway between the western highlands and the coast, is hot and generally or locally damp, and mists (which, however, are not very common) may then occur in the low-lying districts.

Dew is very heavy in the dry season, but two hours after sunrise all trace of moisture disappears.

*Winds on Lake Nyasa.*—The lake is subject to somewhat changeable winds. During the dry season from May to August there is a south wind known locally as *mvera*. The phenomena differ with the locality. Along the southern part of the Portuguese shore it may blow continuously for 2 or 3 days with a cloudy sky, and with a morning temperature as low as 65° and a maximum of 75°. Squalls of very fine rain take place in the evening. This wind sometimes intermits with east in the morning and a slight westerly breeze in the afternoon. From Msinji to Msumba the evening wind falls and then passes through a quarter of the compass to east. The state of the water is often heavy through the night, but without crested waves. This east wind appears to be very local. Again the wind may merely decrease in force in the evening, being renewed in the morning for two or three consecutive days. The lake may at this season be badly disturbed by a *mvera* rising on the west side in the evening and blowing through the night. Causally these winds are comparable with ordinary land and sea breezes.

In the rainy season the prevailing wind is north-west, with variations from west to north. It is locally known as the *lilinga*. It is the wind of storms, and is accompanied by heavy thunder and lightning. Considerable damage to buildings through this wind seems to be a frequent experience each year. The *lilinga* causes a swell on the lake which is not without danger for small craft.

Between the rainy and dry seasons the prevailing wind

is a strong easterly breeze known as *lilogela*. It is intermittent with a light westerly and occasionally northerly wind. The *lilogela* is very strong towards morning, and may last throughout the day.

Waterspouts are frequent to the north of Likoma, and occasionally heavy storms occur.

#### EARTHQUAKES

Occasional earthquake shocks are felt on Lake Nyasa, but there is no evidence of their occurrence elsewhere.

#### LOCAL TIME

By a decree of 1911 standard time in Portuguese East Africa was fixed at two hours in advance of Greenwich mean time, i.e. the same as South African standard time. Midnight is legally reckoned as 0, and hours p.m. as 13-23. In 1913 it was arranged that the standard time should be transmitted every other day from the telegraph station at Port Amelia to other telegraph stations in the Company's territory.

#### MAGNETIC VARIATION

The magnetic variation, according to *Africa Pilot*, Part III, 1915, was 6° 30' W. at Cape Delgado, 7° 10' W. at Ibo, 7° 30' W. at Pemba Bay, and 7° 40' W. at Almeida Bay, decreasing about 10' annually.

#### FAUNA

Game is fairly plentiful in the north and west of the territory, but very scarce in the east and in the Medo district. The elephant is common in the north and is met with throughout the Nyasa region and to the east of Lake Amaramba. The rhinoceros is rare. Hippopotami are common in the large rivers, such as the Rovuma and the Lujenda, and on Lake Nyasa, and cause much damage to native crops. Crocodiles are common in the Rovuma and its tributaries and on the

shore of Lake Nyasa. Lions and leopards occur frequently in the region of the lake; they cause much damage to native live stock, and natives are often killed by lions. Hyenas are also found. Monkeys are common, and the yellow baboon is met with in the country east of Medo. The buffalo occurs west of the Lujenda and east of Lake Amaramba. Kudu, duikers, bush and waterbuck, and hartebeeste (Lichtenstein's) are met with. The sable antelope and reedbuck are common to the west of the Lujenda.

The natives west of the Lujenda possess considerable quantities of cattle and goats. On the coast are a few small herds of Madagascar cattle.

Game birds are rare in the country east of the Lujenda. The East African guinea-fowl is most common. The lesser bird-life of the country west of the Lujenda is southern in character, resembling that of the North-east Transvaal. Yellow-billed kites, pied crows, and ravens are common. Fish eagles are found on the lake.

Excellent fish is plentiful in Lake Nyasa and in the principal rivers.

Jiggers and ticks occur in all native settlements, but tick fever does not seem to be common. *Anopheles* mosquitoes occur up to 3,000 ft. of altitude, and malaria is prevalent throughout the territory. Port Amelia, however, is exceptionally immune, and more than one authority remark upon the freedom of the country between Pemba Bay and Lake Nyasa from mosquitoes, jiggers, and other insect pests, excepting tsetse. The tsetse-fly (*Glossina morsitans*) is found throughout the country, and sleeping sickness of the Rhodesian type occurs on both sides of the Rovuma and in the districts of Lake Nyasa and Lake Amaramba. Unlike *Glossina palpalis*, *G. morsitans* occurs far from water. The form of sleeping sickness which it carries is even more deadly than the better known variety communicated by *G. palpalis*. It is, however, not very common, and no case is known of the infection of a white man in the Company's territory.

Major Stevenson Hamilton, in his journey from Ibo to

Lake Nyasa, met with the insect in two places—in a small belt near the Mwagidi river and the Mkulu hills and from the right bank of the Msalu to the right bank of the Lujenda. The specimens he examined, however, belonged to the species *pallipides*, not *morsitans*.

West of the Lujenda domestic cattle are common, so presumably tsetse is not prevalent in the hill-country.

Locusts are found throughout the territory and are sometimes extremely destructive in the country east of Lake Nyasa.

The hills of the white ant are commonly met with, and the report of the expedition against Mataka refers to their use by the natives as cover.

An insect called the *nkungu* fly is found on the lake. They appear in the distance as a thin column 200 ft. high, and settle thickly on everything they meet. One such swarm, encountered 72 miles south of Likoma, from 8 p.m. to midnight, settled on the mosquito nets on a steamer to a depth of 6 in. These flies are said by the natives to be edible.

Bees are very numerous, especially in the Mavia country and east of the Lujenda. Large quantities of wax are collected and exported by the natives.

### GEOLOGICAL FORMATION

The coastal zone appears to consist, as a whole, of sedimentary rocks; thus, in the north-east, a calcareous coral formation is typical, merging above into the sandstone of the Mavia plateau, which is here also calcareous in places. Farther south, about the lower Msalu, mention is made of limestone, which outcrops and forms escarpments, being in part overlain by sandstone. It stores water, and springs are formed above the impervious clay beds beneath it. Inland from the mouth of the Mtepwezi tertiary and cretaceous rocks, shales, sandstones and limestones are all met with before the gneiss of Mt. Podo is reached.

The Mavia plateau in the north-east, above the Rovuma,



consists generally of a grey sandstone, capped here and there with masses of ferruginous granite. Along the Rovuma, below, is a strip of recent alluvium. Farther up the Rovuma, where the edges of the plateau fall away from the valley, the sandstones have been removed by denudation, and metamorphic rocks appear. The prevailing form is a chocolate-coloured schist, but the characteristic isolated granite hills are numerous. Caps of white dolomite and diorites are found. On the lower Lujenda granite and gneiss prevail, but these rocks enclose areas of shales and carboniferous sandstones believed to have been let down from a higher level by faulting. With these are associated the coal deposits of Itule, which are believed to offer the possibility of economic development.

Farther south the central plateau region seems to vary little in its geological formation. Between the upper Mtepezezi River and Pemba Bay a number of rocks have been reported at different points, such as mica-schists, a very old sandstone, and a crystalline limestone. But the prevailing formation is granite, traversed by quartz reefs. Sandstone outcrops here and there, as on the Rariko, and on the Lujenda about the confluence of that tributary a laminated micaceous slate has been stated to occur. The remarkable isolated masses of granite which form so notable a feature of the middle plateau no doubt owe their prominence to the denudation of the surrounding rocks. Portions of the plateau are covered with considerable areas of granite sand.

West of the lower Lujenda and south of the upper Rovuma are extensive tracts of gneiss, with hornblende. Here again rounded masses of granite or syenite rise steeply above the general level, on which, in parts, patches of ferruginous conglomerate occur.

Along the German-Portuguese frontier, where it crosses the mountains between the Msinge valley and Lake Nyasa, the following formations have been observed. On the slopes above the Msinge and Rovuma mica-schists prevail, but are interrupted by a belt of sandstone with quartz. The bare

topmost crest and its vicinity consists of a magnetic ironstone ; beyond this to the west there is a lower crest of gneiss, and the hills and slopes immediately above the lake consist of argillaceous schists. Farther south, the western highlands appear to consist chiefly of old crystalline rocks, though limestone is stated to appear near the source of the Msinje river ; from Mwembe south-westward mica-schists are met with, which towards the lake are foliated with gneiss, while hornblende is common. The rocks are much tilted. Along the Anglo-Portuguese frontier mountains of granite as well as others of gneiss are crossed, and considerable quantities of mica are seen in different places.

Among the hills bordering the lake in the vicinity of Mtengula, steatite or soapstone is found in immense quantities.

## CHAPTER III

### ETHNOGRAPHY AND SYSTEM OF GOVERNMENT

Population—Occupations—Native inhabitants—Asiatics and half-castes  
—Missions—Schools—Government and administration.

#### POPULATION

THE population of Portuguese Nyasaland may be classified as follows, though the distribution is by no means certain, owing to frequent migrations, &c.

##### (A) *Aborigines*

- (1) Between the coast and the Lujenda—  
Makonde along the lower Rovuma.  
Matambwe along the Rovuma and some of its confluent.  
Mavia between the Rovuma and the Msalu.  
Makwa. Medo in the Medo and Mwalia region.  
(Lomwe, right bank of the Lurio.)  
Mawa, left bank of upper Lurio valley.
- (2) Between the Lujenda and Lake Nyasa.  
Yao. Machininga on the Lujenda.  
Mazaniga on the hills.
- (3) Western highlands, upper Rovuma, &c.  
Nyasa.

##### (B) *Invaders in the Interior*

Tribes that have adopted Zulu customs—  
Magwangwara from Lake Nyasa to the Lujenda.  
Maviti from the Lujenda to the coast.

##### (C) *Asiatic Immigrants on the Sea-coast*

Arabs.  
Monhes.  
Banyans.  
Goanese.  
Cross-breeds of Asiatics with natives.

##### (D) *European Colonists*

Europeans.  
Cross-breeds of Europeans with natives.

The total population of the territory was estimated in 1915 at 521,125. The native population (520,343) is calculated on the basis of the hut tax and is probably considerably

underestimated. The report of the Nyassa Company suggests that it should be increased by 25 per cent., which would give about 650,000. A recent consular report, however, gave an estimate of two millions for the total population, and earlier estimates (based on very imperfect data) have ranged as high as three to four millions. The native population is apportioned between the various *concelhos* as follows :

Amaramba	.	.	.	.	.	41,158
Ibo	.	.	.	.	.	3,974
Lago	.	.	.	.	.	69,782
Lurio	.	.	.	.	.	43,151
Medo	.	.	.	.	.	88,597
Mocimboa	.	.	.	.	.	24,740
Mtarica	.	.	.	.	.	68,142
Mucojo	.	.	.	.	.	37,227
Pemba	.	.	.	.	.	41,190
Quissanga	.	.	.	.	.	62,099
Tungue	.	.	.	.	.	40,283

The Europeans numbered 184, of whom 8 were German, 6 Greek, 3 Italian, 1 Austrian, 1 Swiss. There were also a few British. The remainder—about 160—were Portuguese.

The returns also give 255 'African-born Whites'. These are natives of Ibo and reside chiefly at Ibo and Port Amelia. This part of the population was originally derived from Goa rather than from Portugal, and many families have been resident in Africa for more than a century.

There were also 81 persons classified as half-castes. They reside in the coast *concelhos*.

Asiatics numbered 272, the great majority of whom were British Indians and Mohammedans. This shows a great decline on the figures for 1913, which were 412. In 1914 there were 296. On the Asiatics and half-castes see further, p. 48.

### OCCUPATIONS

According to the returns for 1915, 177 persons were employed by the Company and 20 by the State (these last include the *intendente*, the judge, and their subordinates). The military police force numbered 476 in December 1916,

and consisted of 4 officers, 22 Portuguese non-commissioned officers, and 450 native soldiers. The *cipaes* or native police numbered 984.

There were 36 planters (58 in 1914), 40 commercial managers, 101 commercial clerks, 5 emigration agents, and 10 'industrial agents'. These are probably whites and Asiatics. 106 were returned as merchants, a heading which would probably include the small Indian traders. Artisans and craftsmen numbered 303. There were also 3 lawyers, 3 doctors, and 5 hospital attendants.

The rest of the population is native and is chiefly engaged in agriculture.

#### NATIVE INHABITANTS

The native tribes of Portuguese Nyasaland are all members of the Bantu stock and all speak Bantu languages, the three principal varieties in this district being Ki-Nyanja, Ki-Yao, and Ki-Makwa. The chief event in their recent history has been the great Zulu invasion of the beginning of the nineteenth century, which drove certain tribes southward, and meant a large introduction of Zulu speech, customs, and war organization.

As a rule the natives have big frames, and are of strong build and graceful gait; in colour they vary from a dark chocolate brown to absolute black; their average height is about 5 ft. 6 in. for a man, 5 ft. for a woman; the hair is crisp and curly, the eyes big and prominent, the shape of the head dolichocephalic; the beard is late and scanty. The system of tattooing varies and serves to mark tribal distinctions. The women of some tribes wear the *pelele*, the lip-ring which artificially distends the upper lip. Circumcision is usual but not universal. Some tribes file the incisors to look like crocodiles' teeth. Women occupy an inferior position except among the Makwa. Polygamy is common, the number of wives sometimes reaching a hundred. The eldest son of the 'great' or chief wife usually is the heir.

Huts are generally circular, except among the Yao, who

build oblong houses. The chief food is grain, especially sorghum and maize, which are made into a sort of gruel; they are also used for making fermented drinks; milk is only drunk when it is fermented. Their methods of agriculture are primitive, and they move to new sites when the soil is exhausted. Among their industries are the manufacture of implements from the native iron in the Medo district and elsewhere, weaving coarse fabrics from cotton among the Lomwe, collecting honey and wax among the Makonde, plaiting mats among the tribes along the Rovuma.

The powers of the tribal chiefs are no longer as paramount as they were, but leave has to be asked by strangers from the chief to pass through his territory, and a tribesman will be stirred to work for his chief harder than for himself. A belief in witchcraft is nearly universal, and it is found difficult to suppress resort to the 'poison-ordeal' as a method of deciding guilt or innocence.

### *Makwa (Wamakua)*

The Makwa extend over the country between the Lujenda and the Indian Ocean, between 11° and 17° S. lat. In 1912 they migrated to a considerable extent into German East Africa. They are one great tribe with subdivisions, distinguished by their tattoo marks. The most important of their divisions in Portuguese Nyasaland is the Medo (the folk over whom Mwalia ruled).

*Language.*—Most Bantu peoples find great difficulty in pronouncing the Makwa tongue, but the Makwas, though they can usually speak Yao, as a rule employ their own speech for purposes of trade, and not much Swahili is spoken among them, though it is said to be generally understood in the Lindi district (north of the lower Rovuma). There are four chief dialects—I-medo, I-lomwe, I-tugulu and Anguru—but the dialectical differences are seldom great. The Lomwe dialect, however, has distinctive features of its own.

*Type and Characteristics.*—The average height of the men is from 5 ft. 6 in. to 5 ft. 8 in. Their physical development

is inferior to that of other native peoples. Their complexion is very dark. They show prognathous tendencies.

Though the Makwa of the Lindi district (north of the Lower Rovuma) are said to be warlike, they are elsewhere a quiet and as a rule sedentary people, thrifty and industrious, but somewhat stupid and dull. They contrast favourably with the Yaos in their standard of truthfulness and morality. They also exhibit more affection for wives and children than is found farther south. Woman occupies an exceptionally favoured position among them; not only has she her own hut and her own plantation, but she has rights to the control of her own time and labour, which make her more than the chattel of her husband. The Makwas of the coast affect Mohammedanism. The men wear waistcloths of bark or trade cloth falling down before and behind. The women wear petticoats of the same material from the bosom to the knee. Different methods of tattooing are found in different tribes; the men are tattooed to a smaller extent than the women; but among the Makwa is found the horrible practice of cicatrization. A common tattoo device that stamps the Makwa men is a half-moon. The tattoo marks are less prominent among the tribes of the interior; among the Lomwe they have almost disappeared. The women wear the *pelele*. Chieftains and their wives have the special privilege of wearing bracelets of brass on their limbs.

*Dwellings.*—The Makwa live in small settlements, established in low-lying places. Their houses are usually circular and thatched; sometimes they are rectangular and occasionally plastered, but there is no capping-piece or apex to the roof. The better houses contain 2 or 3 rooms. The Medo Makwa use a particular grass, closely bound together, for building their walls, with strips of bamboo encircling the house. Some of the Lomwe have much superior dwellings, oblong, with a frontage of 15 or 20 ft., strongly constructed, and with verandahs.

*Occupations.*—In war their weapons are bows and arrows, stout spears about 4 ft. long, and axes. A large proportion

carry muzzle-loading guns. They are an industrious people. Much of their soil is very fertile; in Medo district a second crop of beans is raised in the year independently of the rains. They cultivate the cashew to extract from it a spirit, *arapa*, which is taxed by the Portuguese Government with the hope (by no means realized) of preventing drunkenness. They cultivate millet, maize, manioc, rice, oil-seed, amendoim, and fruit, especially bananas, in which they trade. Cloth and grain are their usual standard of exchange; money is less acceptable away from the coast. Local fashions vary much in the use of beads, and they are a precarious investment for the trader unless he is quite certain of the taste of the particular district he visits. They are clever artificers. In some parts they are occupied in fishing. The Makwa have a special love for hunting; they are very good shots.

*Social Institutions.*—The Makwa are for the most part under numerous petty chieftains with absolute authority. A notable feature (especially among the Lomwe) is the orderly and judicial manner in which they conduct a trial (*milando*); oratory is cultivated and recognized, and there seems to be a real attempt to give a just verdict. Only when the crime cannot be established do they resort to the poison-ordeal (*mwavi*). There is, however, a considerable variety of usages among the Makwa tribes, some of whom, like the Mawa, are a long way behind the others in civilization. The Mawa are said to be cannibals. Last (1887) describes a method by which the intended victim was first intoxicated and then speared.

### *Makonde (Wamakonde)*

This people live mainly in German East Africa, on the Makonde plateau, but they are found in a small number of settlements in Portuguese territory, south of the Rovuma, scattered among those of the Makwa and Matambwe.

*Type and Characteristics.*—They are described as ugly, especially the women, with squat figures and naturally repulsive features, made still uglier by the *pelele*. The Makonde



have narrow, rather low foreheads, nostrils expanding laterally, lips full, but not excessively thick, hands and feet small. Their colour is dark or light brown, their height medium; the men's bodies and limbs are well formed, and their bearing is described as independent. They have long hair, which they seldom cut, and the men grow long beards.

A good many understand Swahili.

They formerly had a reputation as treacherous robbers, but of recent years they have suffered more from the depredations of others. They have been incapable of any organized resistance to more aggressive tribes and have suffered especially from the raids of the Maviti. They have muzzle-loaders, spears, axes, and poisoned arrows. They are described as a quiet, peaceful people now, somewhat stupid, timid and dull, but difficult to deal with when they have been successful in their commerce with Arab traders. Their moral standard is particularly high, and the bride in marriage has more choice than is customary among African peoples. Both sexes wear the simple loin-cloth, and are cicatrized with hideous tattoo marks. Women wear the *pelele*; it is made for the bride by her husband in early years, and takes the place of the wedding-ring.

*Dwellings.*—Their houses are circular, built of thick poles about 9 ft. high, and of clay, with straw roofs. Their fear of the Maviti made them live on sandbanks in the river. Their huts are close together, with the intermediate space cleared and weeded. The headman of each village is practically independent, and there is no paramount tribal chief.

Livingstone mentions the platforms about 6 ft. high, which they use not only for purposes of observation but also to sleep on, protecting themselves from the mosquitoes by the fires which they light below. He describes their villages as remarkably clean.

*Food.*—They are despised by the Yao for eating a green serpent which is common in their locality. They refuse to eat the flesh of the leopard because it is a man-eater. They greatly appreciate the sugar extracted from the stalk of the

*sorghum saccharatum*. They are inordinately fond of *pombe*, the native beer, into which they turn their surplus grain.

*Occupations*.—They cultivate the land extensively, growing fields of *mtama*, rice, sorghum, maize, and cassava. They also collect rubber, gum-copal, and other forest produce, selling them to the Arab traders, intercourse with whom has made them know a certain amount of Swahili, to which their own tongue is allied. They keep beehives in trees, binding the tree with a rag or rope, which is a sufficient deterrent to any possible thief, for superstitious reasons.

### *Matambwe*

These are a remnant of an almost extinct tribe on the Rovuma, and up some of its southern confluent, especially the Mtumbwi. They are almost merged in the Makonde, and, it is thought, will soon be extinct. They lead a miserable existence, living mainly on fish, and sending a certain amount of ivory and gum copal, and formerly slaves to Ibo. They are unwarlike, and have no tribal organization or fixed dwellings. They are armed with muzzle-loaders, spears, and axes. They are very dark in colour; the women are described as comely, but they wear the *pelele*. Tattooing is done with wavy lines, and the incisors are filed. They speak a tongue slightly different from the Makonde, but they can understand them; Swahili also is generally understood.

### *Mavia (Mawia, Mabiha)*

The Mavia inhabit the plateau south of the Rovuma and east of the Lujenda. They also occupy the plateau between the Rovuma and the Msalu.

Physically they are slender and well made. They appear to be a branch of the Makonde, but are not unlike the Makwa. They have had a reputation for being extremely exclusive, but it appears to have been due mainly to a not unnatural suspicion of their neighbours. When their distrust has gone, they have been found a simple-minded, harmless folk.

Their dress is a single strip of cloth. One special feature is that the men as well as the women wear the *pelele*. They tattoo themselves like the Makonde. They live in villages surrounded by a big *boma* (or enclosure of trees and thorny underbush), the gates of which are shut by night. There are about 40 or 50 huts in an enclosure. According to another account, however, they are said to live apart, not forming villages. Their houses are built in circular fashion.

They keep goats and poultry in abundance. Some of them go down to the coast trading in gum copal and rubber, but they are not very ready to receive the Arabs in return, who were said not to be able to penetrate beyond the outskirts of their country.

### *Yao (Wayao, Ajawa)*

The Yao inhabit the region between Lake Nyasa and the Rovuma and Lujenda rivers; they have extended SW. to the Shire region (probably owing to the pressure of the Wamgoni), where they largely dominate the inferior Nyasa people. Their principal divisions have been Machininga on the Lujenda, Mazaniga on the hills. Mtarika was a chief of the former, Mataka of the latter. They have migrated of recent years (especially in 1912) into German East Africa, and are found in considerable numbers east of the Lujenda among the other populations. They seem to have come inland from the coast.

*Language.*—Their language is very difficult and complicated. They are conscious of this themselves, and use Swahili and Ki-Nyanja to a great extent in their trade transactions. The Yao tongue is spoken in four dialects.

*Type and characteristics.*—They are a remarkably fine race, tall and strong, and capable of enduring great fatigue, the best athletes and acrobats of Central Africa. They were originally an aggressive people, but have now become much more quietly disposed. They take naturally to trade and have considerable business capacity, some of which they devoted to the slave trade, wherein they acted for a long time

as intermediaries between the tribes of the interior and the Arab traders of the coast. Contact with the Arabs has modified much of their ways of life, costume, and religion. They are fond of travel and make good guides, and are valued as servants and carriers. The Yao porter will carry 55 or 60 lb. for 18 or 20 miles a day without undue fatigue. They are, generally speaking, enterprising and intelligent, but incline to be cunning and treacherous. Some who have visited the coast have acquired vices of civilization. They have negroid faces, remarkably round, and for Africans have fair skins. Their foreheads are compact, but not particularly receding; their lips are full. The Yao are often Mohammedans, but their religion has little effect on their life and conduct; it does not modify their methods of eating and drinking, nor the way in which they treat their women. In most respects they cling to paganism. An authority of 1887 states that their chiefs practised cannibalism in secret.

Having come under Arab influence, they wear white turbans, and white robes reaching to the knee. They do not tattoo to the extent of some of their neighbours; they only have a sort of rosette as a tribal mark on the forehead and three or four scars about 2 inches long midway between the eye and ear, or on the forehead above the nasal bone, the angle showing to which tribe the man belongs. The *pelele* is probably only found among those women who are of Nyasa origin. They also file the teeth to points. A better method of adornment that they employ is beadwork.

*Dwellings.*—They live in somewhat large settlements. Their houses, owing to Arab influence, are oblong, well thatched, with good-sized doors and often with windows; they are carefully plastered; sometimes they are enclosed with a fence. In the centre of the villages is a roofed space for meeting.

*Food.*—Milk is disliked or ignored; eggs are only eaten when they have been sat on for some time and deserted by the hen. Fish are usually split and roasted. The Yao also eat the flesh of monkeys.

*Occupations.*—As warriors they prefer bush fighting and not assailing fortified places; they are skilful tacticians and know how to take advantage of cover. The spear was their national weapon, but now they are usually armed with the trade gun. They are the best native soldiers in the north of the territory, combining obedience with some degree of self-reliance, but are apt to be cowardly in open fight.

They have little love for agriculture, but they raise peas and tobacco by irrigation, plant cassava, maize, and sweet potatoes, and cultivate mangoes and palms. Their few cattle are a small breed and their sheep of a large-tailed variety, usually black; goats are also kept.

### *Nyasa (Wanyasa, Anyanja)*

The Nyasa live in the Rovuma country, on the shores of Lakes Nyasa and Shirwa, and along the left bank of the Lujenda River to its confluence with the Luambala; also in British territory to the south. They are much mixed with the Yao, who have long terrorized and victimized them.

*Language.*—They belong to the Nyanja group of the Bantu, whose languages are spoken about the basin of the Zambezi, the Shire, and Lake Nyasa. Their speech is closely akin therefore to the Ki-senga and Ki-maravi. It has been loosely described as intermediate between Swahili and Zulu-Kaffir. In comparison with the speech of the Makwa and Yao it is easy to acquire. The differences of dialect become pronounced, because the Nyasa are not great travellers.

*Type and characteristics.*—They are very much darker than many other tribes. Their profiles have little prognathous tendency. They are well made, and the faces of the men are often pleasant and intelligent-looking, with well-shaped heads and high foreheads. They have great masses of hair and take pride in the various ways of adorning it. The women are plain. The Nyasa are an industrious people, assiduous in cultivating crops, quiet and timid.

The Nyasa are desirous of dressing like Europeans, if they can afford it. They tattoo their foreheads and cicatrize their

faces, and the women disfigure themselves with the *pelele*. A great number of rings, bracelets, and anklets are worn.

*Dwellings*.—The largest Nyasa village has over 100 huts, i. e. about 500 people. Most of their settlements are considerably smaller. Both types of house, rectangular and circular, are found among them.

*Food*.—They have the same peculiar dislikes that have been recorded of the Yao; but in meat-eating they have certain tastes that are not general, e. g. they will eat the leopard and hyena. They have a great fondness for *pombe*.

*Occupations*.—They are essentially an industrial people. They cultivate crops, fertilizing the ground with ashes and burnt soil. Their chief crops are sorghum, millet, beans, ground nuts, yams, rice, pumpkins, cassava, sweet potatoes, tobacco, hemp, *bhanga* (which they sell to the Banyans), maize which is grown all the year round, and three varieties of cotton. They manufacture cotton into coarse fabrics. For a long period they have practised the arts of the potter and smith. Each village has its smelting house for native iron. On the lakes they have the further industries of fishing net-making, and canoe-patching. In house construction the men do the building, and the women the plastering.

### *Magwangwara*

The Magwangwara live along the east side of Lake Nyasa; they have recently moved farther north. Their history is much the same as that of the Maviti; being a non-Zulu tribe they have become enamoured of Zulu ways as a result of the Angoni invasion of Nyasaland, absorbing some of their invaders, and have copied their models by raids on their more peaceable members.

There are Zulu words in their vocabulary, but for talking with them the Yao speech is most serviceable.

They are light coloured, with a reddish skin. The women have a regularity of feature and comeliness rare in Africa. They are a race of robbers and fighters, and go to fight at a very early age. Their manner is truculent and bullying.

A combination of Magwangwara and Maviti would have been very formidable, but, fortunately for the other natives and the white settlers, these two tribes have been hereditary enemies.

### *Maviti*

The Maviti are a tribe of raiders who have crossed the Rovuma into the north-east portion of the colony. The name means Zulu, but is only correctly applied to this people in the sense that they have copied the Zulu mode of warfare ; they are really Waninde, and are variously known as Wandonde, Wagindo, Wangindo, Mazitu, Mwangoni. They owe their origin as a raiding tribe to a great Zulu raid which swept over their country, and inspired them with a desire to abandon their peaceful agricultural pursuits for buccaneering. They adopted therefore the head-dress and war cry of the Zulu, and inspired similar terror along the Rufiji and Rovuma and farther south where they came in 1878. Their principal abodes are the plateau country east of the confluence of the Rovuma and Lujenda, and the islands of the latter river.

They are very dark and of a low type. They have ceased to be the formidable and restless people that they were, and appear to have returned to their original occupation of tilling the land. Travellers have reported on them as being friendly and docile.

Their dress usually consists of a small piece of cloth, held up by a waistband. They do not tattoo themselves or wear the *pelele*.

They live in small villages, far apart. Their houses are not uniform in type, but are built in all kinds of East African styles.

### ASIATICS AND HALF-CASTES

The other elements in the population of the colony besides the natives and the Europeans are as follows :

1. The Arabs were the leading influence along the coast before the coming of the Portuguese, and when Portuguese

power waned, their authority became re-established. The Sultans of Zanzibar had much power. The propaganda of Islam spread; the Makwa along the coast were largely Mohammedan, and the Yao, who imitated the Arabs in many ways, brought the cult inland. The great occupation of the Arabs was the slave trade. Their language is Swahili, a Bantu tongue with a large infusion of Arab words, a language used in written documents. There is one special denomination of Arabs along the coast, known as Mujojos, who are principally sailors.

2. Those natives who have become blended with the Asiatic Moslems, a mixed race, who are numerous on the coast and are called *Monhes*. They preserve largely the native type of countenance, and in that part at any rate seem to have but a slight infusion of Arab blood. The term, however, is very variously used, some books speaking of all foreign Moslems as *Monhes*, others confining the word to Indian Musulmans, others even using the word as synonymous with *Banyans*.

3. The *Banyans* are the non-Christian Hindus; they were originally introduced into East Africa at the end of the seventeenth century. The *Banyans* are small traders; they have grasped the mentality of a native better than a European can, and they have other advantages, among them that they can easily acquire foreign tongues, that they are unaffected by the climate, and that the cost of living to them is almost nothing. It is easy therefore for them to oust the white man from competition. They add nothing to the strength of the country, as they are unfit to bear arms, and they add nothing to its revenue, though they carry a great deal out. They do not bring their womenfolk with them, and invariably retire to India when they have made enough money.

4. The Goanese have come from the Portuguese possessions of India or are their descendants. They are Roman Catholics. They are largely clerks, employed at the ports in the customs and other Government services. They are liable to disease, especially malaria.



## MISSIONS

The Universities' Mission to Central Africa has its headquarters for Nyasaland on the British island of Likoma off the Portuguese shore of Lake Nyasa. There is a college at Likoma and another near Kwango on the mainland. The mission has a number of out-stations with schools along the lake shore, which are visited by a mission steamer. There are also three permanent centres in Portuguese territory—Msumba on the shore (with a native in charge), Unangu west of the upper Luchulingo valley (with an English-speaking Yao in charge) and Mtonya near the head of the Luambala (with an English priest in charge). All these have their out-stations with schools. Thus the zone of the mission includes the whole of the Portuguese shore of the lake and the interior as far as the Luchulingo and upper Luambala. The influence of the mission, however, is limited owing to the prevalence of Mohammedanism among the Yao. The native teachers speak Yao and Nyasa, and write Swahili.

## SCHOOLS

At Port Amelia there are two schools :

1. School for the instruction of the native military police with 108 pupils in December 1916.
2. The 'Antonio Centeno' school, which has been temporarily closed. In 1914 there were 14 pupils, 10 of whom were natives and Mohammedans.

At Ibo there are two schools :

1. School for boys with 28 pupils, of whom 5 were natives, 11 half-castes, and 12 'African-born whites' (i. e. Portuguese or Goanese of Ibo). Among these there were 22 Christians and 3 Mohammedans.
2. School for girls, temporarily closed. In January 1916 there were 25 pupils, of whom 1 was native, 10 were half-castes, and 14 'African-born whites'. There were 23 Christians and no Mohammedans.

Evening classes for natives are held at the capitals of *concelhos*.

## GOVERNMENT AND ADMINISTRATION

The administration of Portuguese Nyasaland territories is under the control of a semi-sovereign body, known as the *Companhia do Nyassa*, which received a Royal Charter from the King of Portugal, published on September 28, 1891, but was not definitely constituted until March 16, 1893. The company, while holding the land and being responsible for the general administration, exercises these privileges as the delegate of the Portuguese Government and subject to conditions set forth in the charter. In certain matters it cannot act independently of the sovereign Power, and the Portuguese Government reserves a power of veto over regulations of public interest made by the company. Moreover, in the event of the company failing to carry out its undertakings, the Government may rescind the contract with the company. Disagreements between the company and the Government are to be submitted to a tribunal of arbitration.

Apart from these restrictions the Nyassa Company enjoys the exclusive right of imposing and collecting the import, export, and harbour dues, together with all other taxes, direct or indirect; except that the Portuguese Government after the expiration of twenty-five years may impose its own taxes. It provides and controls the currency; issues postage and fiscal stamps; grants licences; and possesses an exclusive right (a) to construct and work railways, roads, telegraphs, harbours, &c.; (b) to mine for gold, coal, and other minerals; (c) to hunt elephants; (d) to gather sponges, coral, &c.; and (e) to collect rubber and other forest products.

The Portuguese Government is represented by a Commissioner (*Intendente*), resident at Ibo, who has a consultative voice and forms the channel of communication between the Government and the company; the magistrates and officials of justice must be nominated by the sovereign Power; and the State reserves the right to station its own military forces in the territory, although the company is empowered to organize and provide land- and sea-police for its own purposes,

the officers of which must be officers of the Portuguese Army and Navy.

The administration in Europe is carried on by means of a council of administration, consisting of ten members, four of whom sit in London and form the foreign section of the council.

The administration in Africa is carried on by a civil and military staff, at the head of which is the governor, who, aided by the general secretary and his staff, is directly responsible to the council of administration in Europe. Subordinate to the governor are the heads of the various administrative departments, such as those of finance, customs, civil and military police, port service, health, public instruction, and posts and telegraphs.

For administrative purposes the territory is divided into eleven *concelhos* or districts as follows. The names are spelt as in Portuguese, and transcriptions into English form (where this differs) are given in brackets. The dates are those of the formation of the *concelhos*.

Ibo, capital Ibo.

Mocimboa, capital Mocimboa (Mazimbwa).

Quissanga, capital Quissanga (Kisanga).

Tungue (Tunghi), capital Palma.

These were the four original *concelhos* established by the Company in 1894 on the basis of the former military commands.

Pemba, capital Porto Amelia (Port Amelia, 1898).

Medo, capital (provisionally) Montepuezi (Mtepwezi, 1899).

Lago (Lake), capital Mtengula (1901).

Mtarica, capital Mtarica (Mtarika, 1901).

Amaramba, capital Kuamba (Kwamba, 1901).

Lurio, capital Mucufi (Mkufi). This *concelho* was formed in 1904 out of the southern part of Pemba.

Mucojo, capital Mucojo (Mkoju). Formed in 1910 out of the continental portion of the *concelho* of Ibo.

At the head of each of these districts is a *Chefe* or administrator who is directly responsible to the governor. The

control and administration of the districts are effected through a number of military and administrative posts. These were formerly almost always in charge of a member of the military police, usually a European non-commissioned officer, but since the military occupation of the territory has been effected, the majority of the posts, especially those in the coastal region, have passed under civilian control. *Cipaes* or native police are generally employed in garrisoning the posts and collecting hut tax, &c., from the natives.

The official seat of the governor is Port Amelia, where also are the head-quarters of the secretary-general, the labour department, the treasury, the posts and telegraphs, and the military police, but the chief officials appointed directly by the Portuguese Government, such as the *Intendente*, the judge of first instance, the *Conservador* (or keeper of the property register), &c., still reside at Ibo, which is also the seat of the departments of public health, ports, and customs.

## CHAPTER IV

### HISTORY

Early history—Delimitation of frontiers—Early years of the *Companhia do Nyassa*—Occupation of the interior: first stage—Portuguese relations with Mission to Central Africa—Occupation of the interior: second stage.

#### EARLY HISTORY

LITTLE is known of the early history of Portuguese Nyasaland. Arab influence on the coast no doubt dates from a very early period, since Quiloa (now Kilwa Kisiwani, north of Lindi) was one of the most important places of trade in East Africa from the tenth century onwards. Ibo and the neighbouring islands were occupied by the Portuguese in the sixteenth century. When Dos Santos visited them in 1591–4 they supplied Mozambique with most of its provisions and were administered by a governor sent yearly from Mozambique whose authority extended up the coast as far as Cape Delgado. At the end of the seventeenth century Portuguese merchants were established at Kerimba and Ibo, and there was a certain amount of trade with the mainland in slaves, ivory, and wax. In 1761 the islands of Cabo Delgado were established as a separate government under that of Mozambique, but their prosperity was cut short by the revival of Arab power which proceeded from the Sultanate of Muscat and Zanzibar, by native wars, and by the raids of the pirates of Madagascar. Many of the islands were abandoned, and in 1816 the seat of government was moved from Kerimba to Ibo, which was comparatively strongly fortified.

There ensued a period of stagnation, during which Arab influence made great progress both on the coast and in the interior. One of the most important of the Arab trade-routes ran south-west from Kilwa across the Rovuma and thence to the south-eastern shore of Lake Nyasa through the Yao

country. The Yaos themselves took a leading part in the slave trade, and became more thoroughly islamized by contact with the Arabs than any of the surrounding tribes. It was during this period of slave trading and the influence of Zanzibar that the interior of the country was first visited by Europeans (excepting Bocarro in 1616)—by Silva Porta in 1854, by Livingstone in 1859 and 1866, and subsequently by members of the Universities' Mission to Central Africa, who established themselves in 1886 at Likoma off the east coast of Lake Nyasa.

#### DELIMITATION OF FRONTIERS

The Portuguese first attempted to establish their influence in the Nyasa territories after the scramble for Africa had begun. The expedition of Lieut. Valadim to Mwembe in 1889 ended in disaster, his party of five being massacred by Mataka. On the other hand Augusto Cardoso in his journey to Lake Nyasa in 1885-6 made treaties with the Yao chiefs Mtarika and Kwirasya (Cuirassio) in the Lujenda region, and Antonio Maria Cardoso, who led an expedition of 986 men from Quelimane to Nyasa in 1888-9, induced most of the native chiefs to the south and east of the lake to accept Portuguese sovereignty. In the region south of Lake Nyasa, however, British traders and merchants had been first in the field, and when later in 1889 Major Serpa Pinto and Lieutenant Continho led a large expedition north across the Ruu an ultimatum was sent to Lisbon, and the Portuguese Government was forced to admit the British claims to the Shire Highlands and the southern end of Lake Nyasa. The frontier was determined by the treaty of June 1891 (which in this respect does not differ from the unratified 1890 treaty), and was delimited by an Anglo-Portuguese commission in 1899.

The frontier between German East Africa and Portuguese territory had already been determined by the treaty of 1886. The frontier was to follow the Rovuma as far as the Msinje confluence and thence westward to the lake. However, in 1894 a German force occupied Kionga and the island of

Swazo, and the Portuguese Government was obliged to accept a new frontier which for the most part follows lat.  $10^{\circ} 40'$  S. from Cabo Delgado to the Rovuma. This frontier was delimited by a joint commission in 1895, and the frontier from the upper Rovuma to Lake Nyasa in 1907.

#### EARLY YEARS OF THE COMPANHIA DO NYASSA

Immediately after the conclusion of the Anglo-Portuguese treaty negotiations began for handing over the Nyasa territory to a chartered company, and finally in 1893 the *Companhia do Nyassa* was formed, which, in spite of great financial difficulties and many changes, has administered the country ever since.

The Company entered in 1894 into occupation of its territories, which were known then and for some years to come as the territories of Cabo Delgado. During the first years occupation was confined to the coastal territory, which was divided into four *concelhos*—Tungue (Tunghi), Mocimboa (Mazimbwa), Ibo and Quissanga (Kisanga), in which custom-houses and a few military posts were established. The difficulties of the Company were much increased by a dispute with the Mozambique Government on several questions, of which the rights of the company over the town and island of Ibo, and the control of traffic in powder and arms were the most important. These questions, however, were satisfactorily settled in 1897–8. In these years little effort was made to control the native tribes, and the military occupation of the territory was the work of the second period, 1899–1913.

The general position was as follows :

Portuguese influence was practically limited to Ibo, which was an old Portuguese town of the type of Quelimane and Inhambane, inhabited chiefly by half-castes and having few relations with the mainland.

The coastal territory was strongly Mohammedan, and the more important chiefs, such as Haji Mussa of Changane and Said Ali near Ibo, were naturally opposed to the European

occupation. Farther inland was the zone of the Makwa and Makonde chiefs, some of whom had considerable power. These districts, especially the Mavia (Makonde) plateau in the north and the Lurio country in the south, were little affected by external influences, and though the more important chiefs had themselves adopted Islam, the tribes to the east of the Lujenda were for the most part pagan. The Mohammedan Yao across the Lujenda are the most important race in the company's territories, on account of their numbers, their enterprise, and the country that they occupy. During the middle and latter part of the nineteenth century they advanced from the Lujenda to the south-eastern end of Lake Nyasa and into the Shire Highlands, dispossessing the Nyasa of their lands and slaves. When Great Britain occupied the country the Yao chiefs, with their allies the Arab slave traders, proved most formidable enemies to the government of the Protectorate, and it was six years before Makanjila in the south-eastern corner of the lake and Zerafi in the Mangoche hills were completely defeated, the latter taking refuge in the territory of the Nyassa Company. The independent Yaos across the Portuguese border naturally remained a source of difficulty to the British, and in 1899, after a series of raids by Mataka of Mwembe on the British shore of the lake, vigorous remonstrances were addressed to the Portuguese Government. The Nyassa Company was accordingly commanded to pacify its territory, and in this way the occupation of the interior began.

#### OCCUPATION OF THE INTERIOR: FIRST STAGE

The first step was the occupation of the district of Medo on the upper Mtepwezi, in order to open a route to the Lujenda and the lake. The district was formed into a new *concelho* (1899), and a military post was established at Mwalia's town. The chief, after an unsuccessful attempt to capture the post, burnt his villages and retired south-east towards the Lurio, whence he carried on an intermittent warfare with the Portuguese for some years.



At the same time (1899) the Machado expedition marched down the Lujenda from the British frontier and entered Mataka's country, burning Mwembe and his other villages. The chief retired across the Rovuma into German territory, whence, however, he soon afterwards returned. Meanwhile an important expedition under Major A. G. Spilsbury was sent out from Europe in order to take measures for the development of the country. This mission laid out the town of Port Amelia, to which in 1907 the seat of government was transferred from Ibo. In 1900 the mission travelled across country to the lake by way of Medo, Mtarika, and the Luambala valley. A military column under Lieut. Pires Viegas, consisting of 99 Portuguese and 226 native soldiers, followed the same route immediately afterwards and established a chain of posts from Medo to Lake Nyasa, including the Fort of Dom Luiz Filippe at Mtarika.

In consequence of these expeditions three new *concelhos* were established—the Lake (Lago), Mtarika, and Amaramba—and a framework for the administration of the whole of the interior was set up. For some years after this, however, the rate of progress was slow, chiefly on account of the financial difficulties of the company. Mataka's country between the Lujenda and the lake was still unsubdued, and the Medo route was exposed to the attacks of Mwalia and other disaffected Makwa chiefs, while the lake shore was frequently raided by Mataka's ally, Malinganile, from Chitagala in the Msinje valley.

In 1902 a small expedition from Mluluka against Mataka was attempted. It was surrounded by superior numbers south of Mwembe, and with difficulty succeeded in retreating to the Luambala.

The death of Mataka in 1903 afforded the company a great opportunity of asserting its authority. Unfortunately at this moment Mtarika, the most important chief on the Lujenda and a firm friend of the Portuguese, died also. His successor promptly revolted and attacked the fort of Dom Luiz Filippe in concert with the new Mataka.

In the rest of the country the important chiefs were practically independent. The government had imposed a hut tax in 1898, but any general levy was impossible, and the tax was only collected from the natives of the coast territory and from those who were dependent on the military posts.

#### PORTUGUESE RELATIONS WITH MISSION TO CENTRAL AFRICA

The occupation of the east shore of Lake Nyasa was effected between 1900 and 1905. This region had been for many years the sphere of the activities of the Universities' Mission, which from its centre in the island of Likoma maintained relations by steamer with a chain of stations along the shores of the lake. The Mission had been strongly British in sentiment at the time of the partition of Africa, and Bishop Smythies (about 1887) had warmly advocated the British occupation of the Nyasa territories. The Portuguese consequently looked with little favour on the Mission, and during the first years of their occupation relations were somewhat strained. Two posts had been established by the expedition of 1900, one at Mtengula which became the head-quarters of the *concelho*, the other at Luangwa or Port Arroyo, and from these points the officers of the company began to enforce submission to Portuguese authority and payment of hut tax along the lake shore and to some extent in the hill country behind. The natives were treated with considerable harshness, which was, no doubt, to some extent unavoidable considering the small force at the disposal of the *Chefe* and the difficulty of controlling small parties of native troops (generally Makwa). The remonstrances of the missionaries were at first disregarded, and appeals were then addressed by them to the authorities at Lisbon and to the Government of the British Protectorate at Zomba. In 1902 Archdeacon Eyre visited Lisbon to lay these complaints before the president and directors of the Nyassa Company, and was received with great consideration. By the autumn of the same year the missionaries were satisfied that a change for the better had taken place in the methods of administration.

One point of friction remains, however—in the exceptional position of the head-quarters of the Mission, which although close to the Portuguese shore of the lake has been recognized as British territory. No representative of the government of British Nyasaland is present on the island, and it is apt to be regarded by the natives as a no-man's land and a place of refuge for those who have a grievance against the Portuguese administration, although the missionaries have always endeavoured to maintain a correct attitude towards the Portuguese in this connexion.

In 1911 special friction was caused when the Mission allowed the African Lakes Corporation to open a store on the island in place of the private store which the Mission had formerly maintained for the natives. The chief of the lake *concelho* feared that the opening of this store would cause serious smuggling into Portuguese territory, where the cost of native goods is considerably higher, and threatened to enforce all the Portuguese duties against the island. Acting apparently on his orders, Corporal Taveira, head of the Kobwe post, seized one of the boats of the Mission, flogged the native captain, and imprisoned the crew. The head of the Mission, Dr. Fisher, visited the post with several Europeans and asked for the release of the boat and its crew. Eventually the prisoners set themselves free, against the orders of Corporal Taveira, and in the dispute that followed the latter shot and killed the Rev. A. J. Douglas, one of the missionaries. An inquiry was held on the lake by a British commissioner, and subsequently a court martial at Ibo found Taveira guilty of culpable homicide and sentenced him to a year's imprisonment.

#### OCCUPATION OF THE INTERIOR : SECOND STAGE

In 1908 a more vigorous policy was initiated when the governor (Sr. Matta e Dias) determined to put an end to tribal independence and to occupy and administer the whole country.

The interior of the coast *concelhos* was the first part of the territory to be dealt with. In 1909-10 one column, consisting of 14 Europeans, 133 native soldiers, and 74 auxiliaries, operated in Mucojo, while another, consisting of 8 Europeans and 102 natives, operated in Kisanga and Pemba *concelhos*, against the chiefs Magwia and Mogabo. Eight new posts were established, and the payment of hut tax was enforced throughout the district.

In the following year Machemba, the principal chief of the Mavia plateau, was dealt with, and posts were established throughout his country.

There remained the Mataka problem, which was an affair of much greater magnitude. Mataka was the strongest of all the Yao chiefs, and he had the prestige of years of successful resistance to the Portuguese. His influence extended from the Luambala right up to the Rovuma, on the other side of which he possessed an important *pied-à-terre* near Sasawara. A considerable traffic in powder and arms existed between Mataka's villages on the Rovuma and Mwembe, as well as from farther up the Rovuma into Malinganile's country. The first step to be taken was therefore the establishment of a line of posts to the north of Mataka's country, which would cut off the rebel chiefs from the Rovuma and German territory. In 1910 a column, consisting of 4 Portuguese, 120 sepoys, and 205 auxiliaries, succeeded in establishing a post at Macaloe in Malinganile's country, after overcoming the resistance of that chief and of Halifa Mataka, the head of Mataka's villages across the Rovuma. In the following year a larger expedition (5 Portuguese, 147 sepoys and native soldiers, and 475 auxiliaries) completed the work by defeating Mataka's people in the Wizulu (Oizulo) hills and establishing a post at Oizulo and two on the Rovuma at Maziwa and Makaloge.

A serious incident occurred at Maziwa in May 1912, owing to the connivance of the German authorities in Mataka's traffic in powder and arms across the Rovuma, and to their arresting a patrol of 4 soldiers from the Maziwa post. The

Germans, however, asserted that the patrol had been caught raiding near Sasawara. Soon afterwards Mataka attacked the post and the garrison abandoned it. This incident was but one of a series which occurred on the German-Portuguese frontier between 1895 and 1912, to consider which a joint commission was to have met in 1913. These incidents were usually concerned with smuggling, the carrying off of women, and the aggressions of frontier patrols, and for the most part they seem to have been due to the actions of ill-controlled native askaris.

In the autumn of 1912 the final expedition against Mataka was launched. The column was composed of 18 Europeans, 370 sepoys and native soldiers, 2,500 auxiliaries, and 500 carriers. Assembling at Mtarika on September 29, it marched to Oizulo and then descended on Mwembe from the north. Little resistance was met with, and on October 8 the column entered Mwembe. Mataka himself fled across the Rovuma into German territory, and Malinganile and the other chiefs made their submission. A strong post named Fort Valadim was built at Mwembe, and the whole country between the Lujenda and the lake was thoroughly pacified.

In the autumn of 1913 there were operations of no great importance against the Makonde of the Mavia plateau.

The conquest of Mwembe marks a new period in the history of the territory. The way was now clear for the development of the interior, and the financial prospects of the company were considerably brighter. The revenue had considerably increased, the hut tax producing £46,560 in 1913 against £1,275 in 1901.

Throughout the years (1900-13) in which the Portuguese were establishing their control there was a considerable emigration of Yao and Makwa into German territory, and this was encouraged by the Germans who wished to restore the prosperity of the depopulated lands along the Rovuma. Thus about 1900 Halifa Mataka migrated to the country east of the Sasawara confluence. Mtarika, Kandulu, and Kumpelembe settled on the north bank of the Rovuma in

1909, and Mataka himself fled there on the occupation of Mwembe. No doubt many of the Yao returned to Portuguese territory after peace had been finally established, but there remains a considerable number of natives, including several chiefs of position and influence, who are hostile to the Portuguese and ready to make trouble if they have the opportunity.

The social conditions of the territory across the Lujenda have been considerably altered by the Portuguese occupation and the enforcement of order. The population which was formerly concentrated round some acropolis like Unangu and Mtonya hills is scattering in search of fertile and well-watered land. According to the missionaries who first came to Unangu, there were 1,000 huts on the hill above their station ; now there are none.

The authority of the great chiefs is disappearing, and tribal organization is becoming broken up. There does not, however, appear to be any decline in the influence of Islam—rather the contrary. It is true that the great chiefs were leaders of Islam, and their towns, e. g. Zerafi's, Mataka's, were religious centres. However, the decline of the power of the chiefs is accompanied by a growth in the influence of the teachers and writers, who tend to take the place of the chiefs as the religious leaders of the people.

## CHAPTER V

### RESOURCES, TRADE, AND FINANCE

Agriculture — Land tenure — Domestic animals    Ivory — Fisheries—  
Minerals — Supplies—Native industries — Commerce    Shipping — Labour  
—Wages—Finance—Currency.

#### AGRICULTURE

THE agricultural resources of Portuguese Nyasaland are almost entirely undeveloped. With the exception of a few plantations in the coastal districts, in the lake and Amaramba *concelhos*, and in the central districts, cultivation is carried on by the natives for their own needs and occasionally for export purposes. A small number of agricultural concessions has been granted by the Nyassa Company in the above-mentioned *concelhos* and also in the Tunghi, Mazimbwa, Mkoju, Ibo, Pemba, and other *concelhos*, both to private individuals and to companies. Of the latter, the Nyassa Plantations, Ltd., formerly the Nyassa Rubber Company, received from the Nyassa Consolidated, Ltd., a concession for the exploitation of rubber within certain districts; the Nyassa Consolidated, Ltd., having itself acquired the assets of the Search Syndicate, Ltd., and other rights, works in close co-operation with the Nyassa Company. In view of the possible construction of a railway from Port Amelia to Lake Nyasa, no further concessions are being granted in the districts of Port Amelia, Medo, Mtarika, and Lake Nyasa, through which the railway would run.

*Agricultural Divisions.*—The territories of the Nyassa Company contain large tracts of land suitable for the growth of tropical products. These may be roughly divided into three divisions corresponding to the coastal, middle plateau, and highland zones. The first is most suitable for the cultivation

of coco-nuts and production of copra. The second, although containing fertile lands along the river courses, is comparatively less adapted for agricultural exploitation, particularly towards the north, between the Msalu and Rovuma rivers, and is described as arid in the portion lying to the north of the Mtepwezi river. About four days' march from the coast, in the Mavia plateau country, there is an area suitable for rubber cultivation. The third contains excellent agricultural land, especially between Mtonya and Lake Nyasa, stated to be equal, if not superior, to the best agricultural districts in Rhodesia, and specially suitable for the cultivation of coffee, cotton, and rubber.

The most cultivated portions of the territory are those in the vicinity of Ibo, Mussemuco, Kerimba, Vista Alegre, Keriamakoma, and Olumbwa; then Pemba and its environs, Tunghi and Mazimbwa, and, on a small scale, Lurio. As regards Lake Nyasa there are cultivated areas in the two *concelhos* of Lago and Amaramba.

*Agricultural Products.*—The natives cultivate maize, millets and beans of various kinds, cassava or manioc, ground-nuts, sweet potatoes, sugar-cane, pepper, cloves, calumba, papaia, sesamum, pineapples, bananas, oranges, and tobacco. The last commodity might be extensively grown on the banks of the Rovuma and Msalu rivers, and in the Lujenda valley, as the quality is stated to be excellent and the natives already produce considerable quantities. As a rule the mealies are planted in the richest soil, the kaffir corn in the next best, while the ground-nuts and cassava will grow in the poorest ground.

Other products which seem to have an assured future in Portuguese Nyasaland are kapok, which grows wild and of which small plantations have been started; sisal (*agave sisaliana*), which thrives admirably; castor-oil bean; coffee, which grows spontaneously in many places and is already favourably known through the variety called Ibo coffee; sugar, indigo, and cotton.

*Cotton.*—The chief development in cotton has occurred in



the Amaramba *concelho*, where a few concessions have been granted and where in 1913 some 525 hectares in all had been planted. Various reports have been made on the quality of the Amaramba cotton, and it has been stated that Nyasaland is eminently suitable for the cultivation of this product. At the International Cotton Conference, held at The Hague in 1913, Nyasaland cotton was awarded a first prize. The natives have been encouraged to grow cotton. The Sociedade Agricola de Quissanga, established in the region of that name, distributed along the coast seeds from Egypt. The Governor, in a report to the Exposição Colonial, held at Lisbon in 1906, reported that as a result of this measure 'the cultivation of cotton was much developed'. In the Tunghi district, on the other hand, the experiment proved a failure, nor is indigenous cotton common in this region. In the districts of Medo, Mwalia, and Iaparata cotton grows in great abundance, as well as along the Lujenda, but is not cultivated by the natives. In the Lurio region cotton grows freely, but is little cultivated.

*Coffee*.—The best kind of coffee is the 'Café de Ibo', where it grows in quantities. Coffee of a less good quality is grown on the banks of the Msalu, Navidunga, and Pequene; in the Mazimbwa district; in the highlands of Mwiri and Mchibala, and in the districts of Medo and Mwalia and the upper Lujenda. Nine specimens of coffee were shown at Lisbon in 1906.

*Rubber*.—The rubber industry hitherto has been largely in the hands of the natives, who in the past have depleted the indigenous supplies by primitive methods of tapping and by root collection. The latter method has been prohibited, but has proved difficult to prevent. *Landolphia* is found over a considerable area, and is the principal indigenous plant, but experiments are being made with Ceara (*Manihot glaziovii*), which was extensively grown in German East Africa, and with Para (*Hevea brasiliensis*), while *Funtumia*, if not actually native to the north-west of the country, may probably be cultivated successfully.

Rubber occurs practically all over the territory of the

Company, but more particularly by the rivers Lujenda, Rovuma, and Msalu, and south of the right bank of the last river as far as Kisanga; in the Lake Nyasa district, in the valleys of the rivers Luchulingo and Msinje; all over the Mazimbwa and Medo districts; and in many other parts. It is sold by the natives in Lurio, Mkufi, Mambe, Marari, Mazimbwa, and Palma, and is also carried to the villages across the British border. At the Exposição Colonial, held at Lisbon in 1906, eleven different samples of rubber collected in the territory were shown.

*Other Forest Products.*—The mangrove of the coastal swamps is utilized for its bark, which is in great demand for tanning purposes. The export of this product has undergone a serious diminution during recent years owing to the wholesale cutting of the trees. The value of the mangrove bark exported in 1909 was £10,313. During 1912 it was only £338. The export has been temporarily prohibited. In certain localities the *makruse*, or African mahogany, grows to a fair size. Ebony is abundant, but is small and gnarled. Ironwood and sandalwood are also found.

### LAND TENURE

The system of land tenure is by perpetual quit-rent. Charges are low, usually four *centavos* per hectare per annum, and under the charter may not be leased for less than one *centavo* per hectare.

As in the neighbouring colonies and other parts of Portuguese East Africa a freehold title is offered on easy terms, the quit-rent system sometimes proves a deterrent to prospective settlers. Up to the end of 1915 about 445,700 acres had been granted for agricultural exploitation.

### DOMESTIC ANIMALS

Owing to the prevalence of tsetse-fly, Nyasaland cannot be regarded as a ranching country. There are large stretches of territory suitable for cattle-raising so far as pasture is

concerned. At a few places near the coast there are small herds of stunted Madagascar cattle, and it is stated that near Lake Nyasa, around Mtengula, there exist considerable herds of the heavier Angoni cattle owned both by natives and by a few European settlers. The price of cattle in the interior is about £2 per head. It is said that sheep, of the ordinary South African variety, and goats thrive well. Pigs, fowls in large numbers, turkeys and pigeons are also kept. The tsetse-fly makes horses difficult to keep. Donkeys are said to bear the heat well, but not the dampness.

### IVORY

There is a considerable export of ivory. It was reported in 1900 that much of the ivory found its way into German territory and that it was probable that large quantities were hoarded and buried by the natives. Tusks and teeth of the hippopotamus are also exported.

### FISHERIES

Apart from the operations of the natives there is no fishing industry on the coast, with the exception of a fishery established by an Italian at Macaloe for the capture of sharks and tortoises. The waters of the Indian Ocean are teeming with fish; and dried fish, particularly shark-fins, realizes a high price both from the natives of the interior and as an article of export to the Transvaal. Trepang, or *bêche de mer*, known locally as *macojojós*, when cooked and dried, find a ready sale on the Chinese market. Turtles are abundant. Two varieties are caught by the natives, one of which is used for food and the other for tortoise-shell, which is sent to the market at Zanzibar. Amber has been found, but is only of sporadic occurrence, and sponges have not been proved to be of economic value. Fancy shells of all kinds are to be found in profusion, as well as cowries and corals.

The chief product of the Nyasaland fisheries is the pearl-oyster, which is distributed along the coast, particularly near

Tunghi, Macaloe, the islands of Keramimbi and Keronyumi, the mainland near Ngerema, the southern end of Kerimba Island, and Kilalia Island. Dr. J. J. Simpson, who investigated the fisheries of the Nyasa coast in 1907, reported the above regions as most suitable for oyster culture. The natives have largely depleted the supplies of oysters along the coast by indiscriminate collecting, and careful nursing is required to place the industry on a good economic basis. The quality of the pearls is reported to be excellent, and the colour and lustre of a high standard.

### MINERALS

No systematic mineral survey of the territory has been made, and comparatively little prospecting work has been done. In 1894, in a report on the proposed railway, an enthusiastic view was taken of the mineral resources of the country through which the line should pass, specially referring to two coal areas, one of which was located about 12 miles from the coast of Pemba Bay, and the other around the Lujenda river in the neighbourhood of Itule. The former was estimated to be about 20 miles across and the latter to cover an area of about 500 sq. miles. Subsequent reports seem to confirm the presence of coal in these regions and on the Rovuma river. The magnetic iron ore deposits were also stated to be of high value, and extensive deposits of graphite were stated to exist a few miles N. of Mwalia. None of these fields has been tried, but during 1913 it was again reported that a prospector had located deposits of graphite said to be of value.

In 1900 another investigator reported a succession of vast lodes of iron ore near the middle Lujenda, and stated that the natives work the iron in rough forges and make knives, hoes, and hatchets. He also reported the presence of corundum, and said that fine specimens of gems had been found in the Rovuma districts. In 1907 it was stated that in the country between Kisulu and Mocimboa de Rovuma the minerals to be

looked for are mainly gems, and the presence of graphite near Mocimboa de Rovuma is also reported. The presence of gold has been reported in the region between the Lujenda river and the Mandimba hills, in the neighbourhood of Mwalia (where silver has also been reported), and generally along the rivers running into the Lujenda (especially the Rariko) and along the Msalu, and also in the hills north of the Lurio ; but this and the other minerals have to be worked before their economic value can be proved. On the coast are a few salt-pans which supply the needs of the territory.

### SUPPLIES

There is little material for any definite statement as to supplies. In Chapter IV (History) some particulars are given as to the strength of military forces which have operated in the interior. The following quotation from the railway survey report of 1912 is pertinent : ' There was a delay at Mtarika owing to food supply. The Government had been informed by its Resident that the Government stores were well supplied. An expedition against the chief Mataka had been undertaken a couple of months before the arrival of the survey party, and it was then found that half a day's rations for the men could not be collected. The troops having hunted right and left for food, the consequence was that, on the arrival of the survey party, great difficulty was found in obtaining supplies, and delay was caused thereby.' The expedition referred to in the above quotation consisted of 18 Europeans, 370 sepoys and native soldiers, 2,500 auxiliaries, and 500 carriers.

At Ibo and Port Amelia half-caste women make bread of European flour or millet ground locally, but the industry is on a small scale.

### NATIVE INDUSTRIES

Industries carried on by the natives, apart from agriculture, are comparatively few. On the coast and in the lake region the raw cotton is utilized for the manufacture of

primitive cloth, and the leaves of certain palms for the manufacture of mats, baskets, and bags. The iron is made into axes, spears, and knives, and on the east coast the *sansevieria cylindrica* and the fibre of the baobab are utilized for fishing-nets and cordage (*cairo*). In every district beer is brewed from cereals and a kind of spirit from cashew nuts. On the coast, mats of considerable beauty are made, and the *miluane* cloth of the Kerimba Islands, dyed with the indigo of the mainland, is well known on the Mozambique coast.

Commerce is carried on in a general way by all the tribes of the territory, the principal objects of trade being agricultural and natural products. The Yao in particular traverse the country in large caravans, taking ivory and other products to the occupied centres on the coast.

#### COMMERCE

The bulk of the import and export trade is through Port Amelia, which is rapidly superseding the old Portuguese settlement of Ibo as a port of call. In addition, exports from the lake districts are forwarded through the dispatch-posts at Mtengula and Kwamba. Before the war the wholesale trade, both for imports and exports, was entirely in the hands of two German firms, which had also established numerous small shops and were gradually ousting the British Indian trader from the country. Although most of the soft goods imported were of British manufacture, these had generally been re-exported from Lisbon or Hamburg. Roughly speaking, the total cost of freight, landing, and customs on goods imported averaged about 25 per cent. on the home cost for all merchandise sent from Europe.

The custom-house is situated at Ibo.

The imports were valued as follows :

1911.	1912.	1913.	1914.
£100,864 <sup>1</sup>	£124,573 <sup>1</sup>	£121,134 <sup>1</sup>	£126,487 <sup>2</sup>

<sup>1</sup> From the Company's Report. These figures do not agree with the *Anuario* nor with the British Consular Report.

<sup>2</sup> From the American Consular Report.

Of these imports, during the year 1912, 5.6 per cent. came directly from Germany, 27 per cent. came from British possessions, and 1.4 per cent. from the United Kingdom. The imports from British possessions include goods exported from Europe via Bombay on account of cheaper steamship freights. The imports from Portugal and Portuguese possessions were 54 per cent., but included goods shipped via Lisbon and Portuguese ports in Africa on account of the saving in customs charges arising from the process of nationalizing goods for re-export. A 50 per cent. rebate of customs dues is allowed on goods imported from or exported to Portuguese territories. The largest items imported are cotton goods, cloth and clothing, and, chiefly, goods for the native trade. The imports also include a large number of live oxen, as well as considerable supplies of food products.

The exports during the same period were valued as follows :

1911.	1912.	1913.	1914.
£93,629 <sup>1</sup>	£94,342 <sup>1</sup>	£73,843 <sup>1, 2</sup>	£65,389 <sup>3</sup>

The chief items of export in their order of value for the year 1912 were the following : Rubber (£32,180),<sup>4</sup> sesamum (sim-sim seeds) (£13,689), wax (£13,555), ground-nuts (£7,819), mealies (£5,158), dried fish (£3,847), ivory (£3,723), tobacco (£1,851), calumba (£1,591), gum copal, cotton, beans, cowries and shells ; cattle, sheep, and goats ; salt, and rice in husk. Coffee exported was valued at £85. The greater part of these exports was sent to Germany (£34,349), to the United Kingdom (£24,297), and to British possessions (£14,997) exclusive of Zanzibar (£5,149). Exports to the value of £498 and £4,213 were sent to Portugal and Portuguese possessions respectively. It is probable that considerable quantities of produce were smuggled over the borders. In 1909 the administrator of the Amaramba *concelho* reported

<sup>1</sup> From the Company's Report.

<sup>2</sup> The American Consular Report gives £98,891.

<sup>3</sup> From the American Consular Report.

<sup>4</sup> This and the following figures are from the Consul's Report. They do not correspond with the Company's figures.

that great quantities of produce, principally wax, were taken into British Nyasaland, where the natives got a better price for their produce.

### SHIPPING

During the year 1913 the following vessels called at Port Amelia<sup>1</sup>:

<i>Nationality.</i>	<i>No.</i>	<i>Tonnage.</i>
Portuguese . . . .	53	75,677
British . . . . .	28	175,065
German . . . . .	27	135,392
	<hr/> 108	<hr/> 386,134

The figures (arrivals) for the three chief ports during 1914 and 1915 were as given in the table on p. 74<sup>2</sup>.

### LABOUR

There is a diversity of opinion as to the amount of labour available. On the one hand large numbers of natives have been recruited in the past for work in the Transvaal mines and elsewhere, who have subsequently returned with considerable supplies of money. These men brought with them a regular influx of gold, amounting to upwards of £20,000 per annum. On the other hand there can be no reasonable doubt that if the agricultural resources are to be adequately developed little or no surplus labour is available for other territories.

In 1903 the right to recruit labour was granted to the Witwatersrand Native Labour Association, but owing to troubles with the recruiting officials of the Association this privilege was subsequently (1911) given to the Nyassa Consolidated Ltd., who entered into an arrangement with the Witwatersrand Native Labour Association and agreed to be responsible for the recruiting and transport of the natives to the coast. Owing to the high mortality among natives

<sup>1</sup> Consular Report 1913.

<sup>2</sup> Compiled from the Company's Bulletin.



1914.	Steam.		Sailing.		Total.		British.		German.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
Port Amelia	79	295,447	455	7,115	534	302,562	23	169,056	18	84,915
Ibo	44	98,548	775	8,455	819	107,003	3	3,938	12	51,069
Palma	13	17,401	119	1,299	132	18,700				
	136	411,396	1,349	16,869	1,485	428,265	26	172,994	30	135,984

The above figures are imperfect as the returns for March are wanting. In certain cases the tonnage figures of sailing ships are approximate only.<sup>1</sup>

1915.	Steam.		Sailing.		Total.		British.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
Port Amelia	64	124,654	353	4,255	417	128,909	11	49,461
Ibo	45	63,320	685	8,901	730	72,221	2	2,343
Palma	29	64,162	171	1,870	200	66,032	5	30,600
	138	252,136	1,209	15,026	1,347	267,162	18	82,404

<sup>1</sup> The total number of ships entered in 1914, according to the Portuguese *Anuario Colonial*, was 1,651, with a tonnage of 307,812.

from the tropics, recruiting for the Rand north of lat. 22° S. was stopped by the Government of the Union of South Africa in 1913, and on October 10 and 16 of that year contracts were concluded between the Nyassa Company and the Nyassa Consolidated Ltd. for the engagement of natives for agricultural work in the plantations of the Companhia do Boror in Mozambique, in the island of S. Thomé, and at the Katanga mines. In 1915 the engagement of native labourers for work outside the territory was stopped.

As it has been shown that a considerable proportion of the picked men recruited for labour outside the territory never return, the present loss in revenue by the stoppage of recruiting may eventually be made good by the preservation of the labour supply. It has been computed that of 418,423 men recruited from the whole Province of Mozambique (i.e. Portuguese East Africa) during the years 1905-12, 87,081 did not return, giving a percentage of 26.2 who were lost to the Province,<sup>1</sup> and it is probably true that the percentage of loss in the north of the province is still higher.

In the present undeveloped state of the country there is no remunerative employment for the native population, but there can be no doubt that as development proceeds the whole of this labour will be required. The Makwa supply the bulk of the labour employed in the coastal districts. Most of these labourers are of mixed blood. Large reserves of labour exist between the Lujenda river and the coast. Along the banks of the Lujenda are the vassals of Mtarika, who form an important reserve of labour. In some of the central districts, more especially to the north-west, the natives can hardly be said to be under efficient control; but in the Lago *concelho* there are the Nyasa, 'a splendid and inexhaustible reserve of labour, which only awaits the energetic action of the white colonist to develop all the aptitude and capacity for the work which he will create' (Vilhena).

<sup>1</sup> American Consular Report, No. 131, 1913.

## WAGES

Wages paid to native labourers average about 50 *centavos* a week, with the addition, from time to time, of some cloth as a bonus. Youths can be obtained for 25 *centavos*. Those in permanent agricultural service receive as much as 300 *centavos* a month, with food; but where there is not much demand the rates fall to 200 *centavos* a month. These wages are usually paid in cash; only in the interior, where the use of money is not known, is it the custom to pay in goods at the current price. In the lake districts, owing to the competition of British Nyasaland, the wages are somewhat higher.

## FINANCE

There are three principal sources of revenue: import duties, export duties, and hut tax (*imposto de palhota; mussoko*). The receipts from customs during the last five years have been as follows:

	£
1911 . . . . .	19,169
1912 . . . . .	25,565
1913 . . . . .	19,982
1914 . . . . .	13,593
1915 . . . . .	9,261

The receipts from the hut tax were as follows:

	£
1911 . . . . .	25,529
1912 . . . . .	31,430
1913 . . . . .	46,567
1914 . . . . .	48,232
1915 . . . . .	35,184

The total revenue from all sources was as follows:

	£
1911 . . . . .	61,333
1912 . . . . .	73,920
1913 . . . . .	78,104
1914 . . . . .	73,718
1915 . . . . .	55,978

and the total expenditure was :

	£
1911 . . . . .	50,153
1912 . . . . .	64,393
1913 . . . . .	66,729
1914 . . . . .	72,249
1915 . . . . .	59,198

Among subsidiary sources of revenue are the following : property tax, licences, markets, telegraphs, sale of postage stamps, and rents from property. For the purpose of reckoning the excise duties a list of values is published in the Company's Bulletin. The Portuguese Government is entitled to a percentage of  $7\frac{1}{2}$  of the total net profits of the Company.

Of the total shares issued by the Companhia do Nyassa, more than one-half are held by a British Company, the Nyassa Consolidated, and some six-sevenths of the Portuguese Company's total debt in December 1916 was due to the Consolidated Company. Out of a total number of 368,840 shares issued by the Consolidated Company, however, 229,590 were acquired in or about July 1914 by a German financial group.

#### CURRENCY

British gold, Portuguese silver and copper, and notes of the Portuguese Banco Nacional Ultramarino are the currency of the coast. British silver is largely used in the lake district. Government accounts are kept in the Portuguese currency of *escudos* and *centavos*, and may be paid in notes. The exchange between gold and *escudos* follows the bank rates of Mozambique, but is usually about  $\frac{1}{4}$  per cent. dearer for notes. For exchange into silver and copper about 2 per cent. extra is usually charged, and about 1 per cent. is charged for cashing foreign drafts. The Banco Nacional Ultramarino has agents in Port Amelia.

The *escudo* is worth normally about 4s.  $5\frac{1}{4}d.$ , but the rate varies. 100 *centavos* = 1 *escudo*. The gold *escudo* is equivalent to the *milreis* (1,000 *reis*) gold piece of the old coinage which was abolished in 1911.

## CHAPTER VI

### TOPOGRAPHY AND COMMUNICATIONS

Towns—Roads and tracks—Railway (proposed)—Road transport—Cables—Telegraphs—Postal arrangements—Steamship lines—Harbours and anchorages—Coast-line and landing-places—Lighthouses—Coastwise and inland navigation.

#### TOWNS

THERE are no towns of any large size.

*Port Amelia*, the capital, is situated in 12° 58' S. lat., 40° 30' E. long., near the entrance of Pemba Bay, on an eminence about 295 ft. high, south-eastward of Mpira Point. Its population is only a few hundreds. It is the seat of government, and contains the Government house and official buildings, as well as a barracks. Most of the administrative departments have been removed here from Ibo (see p. 53).

The natural harbour of Pemba Bay is a very fine one (see p. 93).

*Ibo*, the former capital, is situated in 12° 20' S. lat., 40° 27' E. long., on the western side of the north-east portion of the island of Ibo. This island is about 4½ miles long and is nearly divided into two by an inlet cutting into its north-west side. This inlet forms an inner harbour for small craft; larger vessels anchor outside (see p. 93). The channel separating the island from the mainland is scarcely navigable for canoes at low water.

The town has a population numbering between 3,000 and 4,000; the population of Ibo Island in December 1916 was 4,225. The population consists of Portuguese (largely Goanese in origin), Arabs, Banyans, and natives.

The town consists of huts, with some stone houses, and contains the star-shaped fort of São João (which dates from the end of the eighteenth century) and two other forts.

Ibo has declined greatly since the abolition of slavery, and more recently through the transference of the seat of government, with most of the administrative departments (see p. 53), to Port Amelia.

*Kisanga* is situated on the mainland west of Kisanga Point, the extremity of a fertile peninsula, 4 miles in length and bordered by mangroves. It is separated from Ibo Island by the shallow channel referred to above. Kisanga settlement has a population of about 2,000.

Other principal settlements and native villages on the coast and inland are referred to in the section on harbours and anchorages (p. 90) and in the section of Itineraries. The posts which are the head-quarters of the various *concelhos* are mentioned on p. 52.

### ROADS AND TRACKS

There is no evidence as to the extent of properly made roads in the territory, but at the best it cannot be large. It has been reported that engineers attached to the Portuguese expeditionary forces have been doing extensive road-work, but its nature and localities are not stated. (Compare, however, Route 34, at end, and Route 28, introduction.) It is also stated that activity in road-making in the lake districts was taking place in 1916, and native labour was being used on a considerable scale. It appears that a wide track has been cleared from Pemba Bay to Mtengula (intermediate points are not stated, but probably Routes 30, 34, and 28 reversed approximately represent the line).

Throughout the territory there are a number of such hoed tracks (usually distinguished in Portuguese reports as *estrada*, from the native path, *caminho*). These have been made by the natives in composition for the payment of hut tax. Such tracks connect the more important Portuguese posts (see below, p. 82). They need to be periodically cleared of vegetation; otherwise they quickly become overgrown. Bridges are constructed of timber obtained on the spot, and have to

be periodically renewed : they are commonly damaged or carried away in the wet season. An agreement made in 1910 with a number of chiefs specifies that each village should open up easy tracks connecting with neighbouring villages, neighbouring posts, and the capital of the *concelho* ; the same agreement provided that *djengo* (bush barricades) should not be constructed around villages, or that where such a barricade existed, two free approaches should be opened through it.

In addition to tracks made under Portuguese direction there are the native caravan routes and paths, which suffice for the ordinary native-borne trade of the territory.

The most important caravan routes within the Company's territory are probably—(a) that which runs from Palma on Tunghi Bay to the Rovuma and up that river to Ngomano at the confluence of the Lujenda (approximately the line of Route 8) ; thence up the Lujenda valley to Mtarika (Route 19), Mluluka (Route 36), Lake Amaramba, &c. (Route 39). The right bank of the Lujenda seems to be the bank habitually followed. (b) The routes from the coast at Port Amelia (Route 30) and Ibo and Kisanga (Route 16) to Mtarika on the Lujenda. The most important caravan routes into the Company's territory from without appear to be—(c) those from Lindi (Route 6 A) and Mikindani (Route 7) to the Rovuma above Ngomano, and (d) those from Songea to Sasawara and Mitomoni (Route 5, note at end). Little is known as to the course of the last, but it used to carry much of the trade of the north-west part of the territory. (e) There are also important caravan routes from British territory to the SW. into the Lake Amaramba district.

In addition to these there exist, or have existed, other caravan routes as to the present importance of which no evidence has been met with. For example (f) the authorities quoted for Route 22 were following, in 1882, a caravan route between the Rovuma and Unangu, and there appears to be an important track or tracks between the Rovuma and Mwembe (Route 21). Again (g) an authority of 1899 refers

to a direct route from Mtarika to Ibo via Kisanga Head, as mentioned in Route 30 under mile 240, while (*h*) as to the southern part of the country there is probably some traffic along the Lurio valley and across it into the district of Mozambique.

Native paths are very numerous, and guides with local knowledge are essential in order to follow them. They wind around trees and other obstacles, and often consist of a narrow passage, passable only in single file, cut through the bush where it is dense, sometimes forming a tunnel.

As for obstacles to communication generally—(*a*) the vegetation, as already seen, forms one; it requires to be cleared periodically if a route is kept in regular use. (*b*) In the rainy season many rivers and streams, which dry up in the dry season, become rapid, deep, and unfordable torrents, sometimes with marsh or deep mud in the valley-bottoms. Various accounts of travel in different parts of the territory refer to this temporary difficulty, whereas (*c*) references to difficulties arising from the nature of the surface of the ground are comparatively few. Mention is made of a rough and stony surface in certain parts, e. g. in the Mavia plateau and the country west of the lower part of the Lujenda (Route 20), and on some of the tracks from the southern part of the Lake Nyasa shore into the highlands. Excessively steep gradients are not often indicated, even in the western highlands though the ascent from Lake Nyasa to the highlands is long and steep in some instances, and very difficult tracks are mentioned by one authority in the Wizulu hills (Route 21 B).

Itineraries in this territory are difficult to compile satisfactorily, for various reasons.

(*a*) Reliable maps of large (or even small) scale are practically wanting. No complete survey of any part of the country has been carried out; the nearest approaches to such are the work of the Anglo-Portuguese and German-Portuguese boundary commissions, which dealt only with comparatively short stretches of territory close along the lines to be laid down, and also a few route-traverses of varying value. In



consequence, very few points in the interior are fixed with any approach to accuracy. The difficulty which may arise from this condition is illustrated by the uncertainty which exists as to the longitude of the important point Ngomano, at the confluence of the Lujenda and Rovuma, as explained in the introduction to Route 1.

(b) Distances are mainly dependent upon the scanty and often unreliable estimates formed by travellers, or upon the roughest form of estimate from the few indifferent maps which exist. Only along the route proposed for the railway (Route 30) from Port Amelia to Lake Nyasa have distances been chained, and it is possible to state the mileage between certain important points with some approach to accuracy, though even here the survey was not, of course, exactly following the tracks.

(c) It will be seen by reference to the section of Itineraries that the authorities available, in some instances, date from many years back, and the routes they followed are liable to have altered. The southern part of German East Africa has many characteristics in common with the Portuguese territory, and in the *Handbook of German East Africa* (I.D. 1055) <sup>1</sup> it is stated that 'in regard to communications much may change in a short while. . . . Native tracks appear, are enlarged, and disappear, native villages change their position, and the rainy and dry seasons may cause a region to wear quite different aspects at different times of the year.' Divergences between the names of villages, and even of rivers, &c., are commonly found as between one traveller's account and another in Portuguese Nyasaland.

(d) Again, there are clearly a number of routes through different parts of the territory, as to which no details whatever have come to hand. In particular, no information is furnished as to routes which may be presumed to link up a number of the Portuguese posts which have been established, especially in recent years. As will be seen from the map, some of these

<sup>1</sup> This handbook may be consulted for other information which, in general terms, would no doubt be applicable in Portuguese Nyasaland.

posts are obviously arranged in chains, and may be assumed to have means of intercommunication. Some of these are referred to in the itineraries (compare Routes 32, foot-note ; 33, 34, 39 under m. 77 and 111, &c.); and wherever it has been possible to do so, the relation of posts to the routes described has been indicated.

The itineraries, therefore, must be used with caution, as they are necessarily incomplete, and cannot be relied upon, as a rule, to furnish more than a general idea of the conditions to be expected along any route (in some instances at a particular season only), together with an approximation to its length.

### RAILWAY (PROPOSED)

There are no railways or tramways in Portuguese Nyasaland.

Schemes have long been in existence, however, for the construction of a railway from Port Amelia, on Pemba Bay, to the shore of Lake Nyasa. More than one survey have been made for a route, and the route laid down in earlier maps differs in some respects from that indicated in Routes 30, 36, and 37 in this volume, which follows the line of the survey of 1912. This was a closer and more detailed investigation than had been made previously. Some particulars from the surveyors' report have been incorporated in Routes 30, 33, 36, and 37, and elsewhere. The line is designed to run from Port Amelia by or near Medo, Mtarika on the Lujenda, up the right bank of that river to a crossing at Mluluka, and by the Luambala valley and Mtonya to Lipuchi, on the lake at the Anglo-Portuguese frontier. The distance from Port Amelia to Mtarika is  $322\frac{1}{2}$  miles, and to Lipuchi  $520\frac{1}{2}$  miles. The route, except near Lake Nyasa, presents no great difficulties, but 'the line between Medo and Mtarika is of a switchback nature . . . traversing the various watersheds and valleys. . . . On the return journey it was found this could possibly be avoided by keeping to the main watershed dividing the Lurio valley from the Lujenda, the fall from this watershed

to the Lujenda, where it would have to be crossed, not being a very heavy one. . . . Should it be decided . . . to follow the main watershed route, another line to the lake might advantageously be studied, that is, through the Luchimwa valley.' The route surveyed from Mtonya to the lake, keeping the line in Portuguese territory, proved very difficult ; a much easier route could be found to the British shore of the lake.

### ROAD TRANSPORT

There was until lately practically no wheeled traffic. But a recent report states that Fiat cars were introduced in 1914, succeeded well, and have since been employed over a large extent of the more important tracks (*estrada*). No statement of their number has been obtained. Otherwise, road transport is carried on by native carriers. These are reckoned, in Portuguese Nyasaland, to bear a load of 50–60 lb., and to cover a distance of 15–20 miles a day over long distances, but if the total distance be short they can do as much as 25 miles a day. By a system of runners, carrying dispatches, &c., a distance of 35–40 miles a day may be covered.

The usual rate of pay for carriers (Portuguese *carregadores*) is 10 *centavos* a day and their food, which comes to another 4 *centavos* (the porter's ration is reckoned to be rather over 2 lb.). At the normal rate of exchange, this would equal about 7½*d.* a day. In the event of a large number of carriers being required these rates may be considerably exceeded. There is (at any rate in some parts) a higher scale of pay for *machileiros* (bearers of the *machila* or carrying hammock), namely 15 *centavos* a day.

The figures quoted above agree fairly with the German estimates in German East Africa (see *Handbook of German East Africa*, I.D. 1055, p. 301, &c.). The rates of pay, however, seem to have been slightly lower (20–30 heller per day) in German territory, and a professional porter was expected to carry about 66 lb., on a distance of 12–16 miles a day for a fairly large train, or farther for a good caravan, with exceptionally strong porters.

On the other hand, porters' pay is somewhat higher in the British Nyasaland Protectorate than in Portuguese territory generally, and this is said to have affected the rates in the Portuguese lake districts.

No evidence has been found as to animal transport used by any of the Portuguese expeditions into the interior—the tsetse-fly would in some parts, at any rate, make it difficult to do so—with the exception of the expedition of 1899 (see p. 58), for which mules were used for transport, and there were a few mounted men.

### CABLES

External telegraphic communication is via Mozambique (see below), which is connected by cables with Beira and South Africa, Zanzibar, and Madagascar.

### TELEGRAPHS

There is a line along the coast, (1) connected southward with Mozambique, and there are two inland lines, (2) and (3) as follow :

(1) *From Mozambique to Palma.* The line passes through the following stations, all situated on or near the coast :

<i>Portuguese spelling.</i>	<i>Usual English spelling.</i>
Moçambique	Mozambique
Mossuril	Mossoril
Fernão Velloso	Fernando Veloso
Memba	Memba
Lurio { Lurio Governo on S. bank	{ Lurio
{ Lurio Nyassa on N. bank	
Mucufi	Mkufi
Porto Amelia	Port Amelia
Quissanga	Kisanga
Mucojo	Mkoju
Quitaraço	Kiteraçu
Mocimboa (Mocimboua)	Mazimbwa
Palma	Palma

## NOTES

- (a) Ibo is connected with Kisanga by means of a short cable.  
 (b) During the latter half of 1914 the line was continued N. of Palma to the frontier of German East Africa.  
 (c) All the stations are open for international service.

(2) *From Palma to Maziwa.* The line goes W. along the right (south) bank of the Rovuma and passes through :

<i>Portuguese spelling.</i>	<i>Usual English spelling.</i>
Palma	Palma
Pundanhar	—
Nangade	Nangadi
Mocimboa de Rovuma	—
Ngomano	Ngomano
Nandecoa	(Namtweko ?)
Mussamira	—
Maziua	Maziwa

(3) *From Port Amelia to Mtarika.* The line goes W. through :

Mutuge	Mtuge
Ankuabe	Ankwabe
(Nicoque)	(Nikokwe)
Meza	Meza
Montepuezi	Mtepwezi
Mwalia	Mwalia
Mtarica	Mtarika

Lines (2) and (3) have been constructed by the Portuguese expeditionary force.

There appears to be no telegraphic communication with the western and south-western posts, but messages to and from Mtengula, Lago Amaramba, Kwamba, &c., are forwarded through the Chinde-British Nyasaland line.

*Wireless Telegraphy.*—A report of 1917 makes mention of a principal wireless telegraph station at Port Amelia, and others at points not specified : no particulars are furnished as to the character of the installations, and the report is not yet confirmed from any other source.

## POSTAL ARRANGEMENTS

There are regular services of mails along the coast from Mozambique to Palma, and inland from Port Amelia to Mtengula on Lake Nyasa. The mails between the chief ports, however, are mainly conveyed by sea.

(A) *Mozambique to Palma*

This route is worked in three sections :

## (1) Mozambique to Port Amelia.

The whole distance is covered in seven days, including stops. Up to November 1916 there were two mails a week in each direction. Since that date the number has been reduced to one in each direction, the mails leaving Mozambique every Tuesday evening and Port Amelia every Monday evening. The following offices are served :

<i>Portuguese spelling.</i>	<i>Usual English spelling.</i>	<i>Intermediate distances.</i>		<i>Remarks.</i>
		<i>miles.</i>	<i>hours.</i>	
Moçambique .	Mozambique	9 $\frac{1}{4}$	2	By sailing launch. The crossing in a dhow takes 4 hrs.
Mossuril .	Mossoril	21 $\frac{3}{4}$	9	
Matibane .	—	34 $\frac{1}{4}$	12	
Fernão Velloso .	Fernando Veloso	—	$\frac{1}{2}$	Across the bay.
Sacamula .	—	21 $\frac{3}{4}$	8	
Memba .	Memba	15	5	
Simuco .	—	24 $\frac{3}{4}$	9	Across the river.
Chaonde .	Chionda ?	13	4 $\frac{1}{2}$	
Lurio Governo .	Lurio (right bank)	—	1	
Lurio Nyassa .	Lurio (left bank)	46 $\frac{1}{2}$	28	
Porto Amelia .	Port Amelia			

## (2) Port Amelia to Ibo.

The distance is covered in three days, including stops. In 1915 there were two mails a week in each direction, leaving Port Amelia on Tuesday evening and Saturday evening on the outer journeys, and Ibo on Wednesday evening and Saturday evening on the return journeys. The following offices are served :

<i>Portuguese spelling.</i>	<i>Usual English spelling.</i>	<i>Intermediate distances. days.</i>
Porto Amelia . . .	Port Amelia } Kisanga } Ibo . . .	2 1

## (3) Ibo to Palma.

No account is available of the mails conveyed by sea. By the land route the mails go three times a month in each direction. In 1911 they left Ibo on the 14th, 21st, and 29th of each month, and Palma on the 1st, 17th, and 24th. The whole journey occupied one week. The following offices are served :

<i>Portuguese spelling.</i>	<i>Usual English spelling.</i>	<i>Intermediate distances. days.</i>
Ibo . . . . .	Ibo } Kisanga } Mkoju } Kiteraju } Mazimbwa } Palma . . . . .	1 2 1 1 2

## (B) Port Amelia to Mtengulà (Lake Nyasa)

The journey from the coast to Lake Nyasa was given in January 1913 as occupying 24 days. The mails went twice a month in each direction. They left Port Amelia in the even-

ing of the 14th and 29th of each month, and Mtengula in the morning of the 5th and 20th. The courier rested a full day at each office. According to a later report (1917) this service was carried on by relay couriers, and the time was thereby reduced to 16 days.

### *List of offices*

<i>Portuguese spelling.</i>	<i>Usual English spelling.</i>	<i>Intermediate times (1913). days.</i>
Porto Amelia . . .	Port Amelia	
Ankuabe . . .	Ankwabe	1
Mesa . . .	Meza	1
Montepuezi . . .	Mtepwezi	1
Mualia . . .	Mwalia	1 (part of)
Mavala . . .	Mavala	1 (part of)
Msalu . . .	Msalu	1
Mtarica . . .	Mtarika	6
Muembe . . .	Mwembe	2
Metangula . . .	Mtengula	4

In addition to this main postal service couriers go

(a) From Ankwabe to Namecala and Pomune.

(b) From Mwalia to Mahua (Mawa) and Kuambe (Kwamba).

Post office rates within the colony of Portuguese East Africa are as follows :

Letters (per 20 grammes)	2½ centavos
Newspapers (per 50 grammes)	¼ centavo
Printed matter (per 50 grammes)	½ centavo
Registration fee	5 centavos

Money orders can be obtained at Port Amelia. The rates are the same for provincial and oversea orders, 5 centavos for each 10 *escudos* up to 100 *escudos*, and 4 centavos for every additional 10 *escudos* above 100 *escudos* up to 200 *escudos*. The cost of exchange is also added, being 3 per cent.

Registered letters and parcels with declared value (inland or foreign) can only be dealt with at the offices of Port Amelia, Ibo, and Palma. If the address is written in Swahili or Gujarati it must be accompanied by a Portuguese translation.



## STEAMSHIP LINES

The only ports visited by steamships are Port Amelia, Ibo, and Palma. The following steamship lines maintained services before the war :

(1) Empresa Nacional (Portuguese line), twice monthly from Lourenço Marquez to Port Amelia and Ibo, one boat also calling at Palma. These boats connected with direct mail steamers from Lisbon.

(2) Union Castle line, every four weeks from Great Britain via the east coast of Africa to Durban and returning by the same route, serving Port Amelia each way.

(3) German East Africa line, a vessel each way, monthly, in the Bombay and East Africa service, calling at Port Amelia and Ibo ; also direct monthly sailing from South Africa to Europe, calling at Port Amelia.

(4) British India line ; occasional vessels.

The approximate distances between Port Amelia and the following places are :

	<i>Nautical miles.</i>
Aden . . . . .	1,950
Beira . . . . .	650
Bombay . . . . .	2,750
Cape Town . . . . .	2,010
Fremantle (Western Australia) . . . . .	4,350
Lisbon (via Suez) . . . . .	5,560
Lourenço Marquez (Delagoa Bay) . . . . .	1,000
Marmagao (Goa, Portuguese India) . . . . .	2,600
Natal . . . . .	1,220
Plymouth (via Suez) . . . . .	6,300
Plymouth (via Cape of Good Hope) . . . . .	6,840

## HARBOURS AND ANCHORAGES

Lindi and Mikindani are mentioned in the section of Itineraries, below, as starting-points of routes from the coast to the Rovuma, and therefore, although outside Portuguese territory, they may be referred to here.

*Lindi* is a small town with a fort and custom-house near the mouth of the Lindi river, in which, off the town, there is good anchorage for vessels of moderate draught in a depth of 9 fathoms, over sand and mud. The river enters Lindi Bay, in which there is fair anchorage along the northern side during the north-east monsoon, in 8 fathoms, over sand; also a temporary anchorage in 5 fathoms, mud, off Ras Rungi.

*Mikindani* harbour, at the head of Mikindani Bay, affords secure anchorage, but the entrance channel is only  $1\frac{1}{2}$  cable wide in one place between the coral flats projecting on either side. Depths on entrance channel  $5\frac{3}{4}$ –12 fathoms, and 7 fathoms at the anchorage. The channel and the shoals in the harbour have been marked by temporary buoys which must not be relied on, the regular buoys having disappeared. On the south-eastern side of the bay, Mto Mtwara is a spacious and well-sheltered harbour, with good anchorage over the greater part of it.

In *Rovuma Bay* there is good anchorage both on the northern side in 10 fathoms, and on the southern in 7 fathoms, over mud. There is no anchorage immediately off the river entrance.

*Kionga Bay* provides anchorages, and small craft can enter Mto Letonda with local assistance; the channel leading to Kionga is shallow and tortuous.

From Cape Delgado southward, the coast of Portuguese Nyasaland has many anchorages. As has been stated, the Kerimba Islands extend along the northern part of the coast, and the eighteen or nineteen openings between the outer islands and reefs lead into a still greater number of secure ports or convenient anchorages for small craft. The more important anchorages, from north to south, are listed below, and the principal of these will then be described more fully.

*Tunghi Bay* (see Palma, p. 93, below).

*Port Mluri*. 7–10 fathoms, mud. Narrow entrance channel; for small vessels only. Portuguese settlement.

*Maiyapa Bay*. 6–10 fathoms, sand, coral and shells. Various positions.

*Mtundo Pass.* 7 fathoms, sand.

*Kifuki Pass* (between Ras Msangi and Kifuki Island). 5-6 fathoms, sand and coral, N. or S. of western point of island, according to monsoon.

*Mazimbwa Bay.* Various positions and depths, mud. Capacious and well-sheltered anchorage. Portuguese settlement.

*Tambuzi Island.*  $\frac{3}{4}$  m. W. of island, 9 fathoms, sand and coral.

*Tungu Namegwo Reef.* Off W. side, 7-10 fathoms.

*Mjumbi and Keronyumi Islands.* Anchorage all over sheet of water between islands and mainland (excepting certain dangers) in 5-15 fathoms, sand and coral.

*Kisanga Islet.* W. of islet, 8 fathoms, sand and shells.

*Pantaloon Reef.* Good anchorage on N. side.

*Mahato Island* (off Pangane Point). Smooth anchorage for small craft on western side.

*Matemo and Das Rolas Islands.* Matemo affords convenient anchorage near it, sheltered from either monsoon and easy of access, but tidal streams are strong; also sheltered anchorage  $\frac{1}{2}$  m. SW. of Das Rolas, 7-9 fathoms.

*Ibo Harbour* (see p. 93, below).

*Port Arimba.* On N. side of Arimba Head, and protected by Kizeva Island and reef. 5-3 fathoms in channel between head and island, leading to anchorage; the port, with 4 fathoms, appears to be a secure harbour for small vessels. Portuguese settlement.

*Port Amelia, Pemba Bay* (see p. 93, below).

*Ushanga.* N. of this village, temporary anchorage in about 11 fathoms, poor holding ground, sand over coral.

*Mkufi.* Portuguese post and port in river; bar may be crossed at half tide by craft drawing 5-6 ft.; anchorage in 2-3 fathoms.

*Lurio Bay.* Sheltered only during southern monsoon. Anchorage in 5 fathoms, sand and clay, 1 m. off mouth of Lurio river, which has a bar passable only by small craft.

*Palma*

Palma, near the head of Tunghi Bay or Port Palma, is situated on the west bank of Mto Mnangani, about a mile within the entrance. There are a Portuguese military post, custom-house, a few European houses, and native huts. It is approached by a buoyed channel, and good anchorage in about 10 fathoms, with even bottom, may be found about  $3\frac{1}{2}$  miles from the town, but the channel (staked) leading into the river has in places not more than 4 ft. at low-water springs.

*Ibo*

The island and town of Ibo are described on p. 78. The island, except on its south-west side, is surrounded by a drying bank with rocks on it, and that part which projects in two points  $1\frac{3}{4}$  mile northward of the north side of the north-east portion of the island is called Mujaca shoal. A sandbank, Corea de São Gonsalo, lies in the channel between Ibo and Matemo Islands, and the usual approach to Ibo harbour is between Mujaca shoal and Corea de São Gonsalo; it is buoyed. The outer anchorage, about  $2\frac{1}{2}$  miles from São João fort, in 5-6 fathoms, is exposed to easterly winds, and the tidal streams run strongly. The inlet cutting into the north-west side of the island for about  $3\frac{1}{2}$  miles forms a harbour for small craft. The outer part of its eastern side is formed by Mujaca shoal, while on the west is another drying bank. It is fronted by a bar. The channel to the inner harbour is marked by beacons in a depth of  $2\frac{1}{2}$  fathoms. The least depth in this channel, in 1915, was 6 ft. at low-water springs.

*Pemba Bay*

Pemba (Pomba or Mwambi) Bay is one of the finest harbours on the East African coast. It is entered about 4 miles W. of Maunhane Point, between North (or Said-Ali) Point on the north and Herbert (or Miranembo) Point on the south. These are nearly  $1\frac{1}{4}$  (nautical) mile apart. The bay expands within into a basin about 9 miles in length from north to

south, and 5 miles in width, with sufficient water in most parts for deep-draught vessels, and shelter from all winds. The shores of the bay have several rocky ledges, especially on the west and south-west sides, extending  $1\frac{1}{2}$  mile in places, and also a number of shoal coral patches and reefs. The bay is imperfectly surveyed. The depths in the entrance are 25-35 fathoms, in the northern bight 7-15 fathoms, and in the southern 11-16 fathoms.

There is an outer anchorage on Imbo bank (about  $2\frac{1}{2}$  miles NNE. of Maunhane Point) and westward thereof. Within the bay there is ample accommodation for shipping.

Port Amelia (see p. 78) has a small stone pier with a T head. Anchorage may be made in about 14 fathoms at  $2\frac{1}{2}$  cables from the pier, or closer in if required.

Spring tides rise 15 ft. ; neaps rise 11 ft.

There are no wharves or docks in the territory.

#### COAST-LINE AND LANDING-PLACES

As the Rovuma river has been dealt with elsewhere as a whole (p. 20), and is covered in the Itineraries from the mouth upward, the description of the coast is carried southward from Rovuma Bay, although the part as far as Cape Delgado is outside Portuguese territory.

Rovum Bay is about 10 miles wide between Ras Mtunda and Ras Swafo, and recedes about  $4\frac{1}{2}$  miles to the river mouth. From Ras Swafo round the head of the bay to Mto Letokoto is a mangrove shore, nearly all swamp at high-water springs. West of Mto Dekomba, a creek three-quarters of a mile westward of Ras Swafo, there is a long flat sandy beach, on which it is possible to land occasionally, but between the river and Ras Mtunda it is seldom possible to land, the bay being open to the swell.

Southward, the coast is low, thickly wooded, and fringed by a reef  $1\frac{1}{2}$  mile wide. Kionga village, on a creek opening into the bay of the same name, is approached by a shallow

tortuous channel used by dhows. Mbwezi Bay, between Ras Nasunga and Cape Delgado, has a long white sandy beach in its western part, but landing is seldom practicable as there are no creeks, and there is no anchorage.

Cape Delgado, the northern point of entrance to Tunghi Bay, is the low extremity of a peninsula extending 4 miles eastward. The bay is about 9 miles wide; the north side is rocky and high, but from the head of the bay it is low and flat. The small port of Palma (see p. 93) is situated on a creek at its head. Dhows, with masts down, lie completely hidden in small creeks in the mangroves.

The Kerimba Islands form a chain extending southward to Arimba Head, a distance of 135 miles. Many are mere coral islets. The islands generally are low and fairly wooded. The mainland abreast of them is also generally low, and rarely visible when coasting outside the reefs, and this, with the fact that the sea-faces of the reefs are steep-to, necessitates caution in approaching this part of the coast, even in the day-time.

Ras Afunji limits Tunghi Bay on the south, and Maiyapa Bay on the north. The latter bay extends south to Ras Nondo, 14 miles, and is bordered by extensive sand flats. From Ras Nondo southward to Ras Msangi the land is low, and drying sandbanks, with shoal water extending 4 miles or more off-shore, renders landing impracticable except at high water. A low sandy coast, occasionally fringed with mangroves, continues southward, but at and near Ras Niguro there are cliffs. Here is Mazimbwa Bay, the southern shore of which is mangrove-covered, with mud flats off it, and from Ras Ulu onward to Ras Yamkumbi (about 15 miles) the conditions are similar; the mouths of the creeks in this part are dry at low water, and the bottom off the entrances consists of mud, over coral. The swampy mangrove coast continues, with numerous creeks, past the mouth of the Msalu to within 5 miles of Ras Pekawi, where it is succeeded by a sandy beach, with numerous villages. The bight between Ras Pekawi and Pangane Point has low sandy shores bordered

by mangroves ; beyond Pangane Point it is higher past Kirinuzi Point and Matemo Island to Ibo Island, and some of the other islands in this part, such as Das Rolas and Kizeva, have sandy beaches.

Kizeva Island is the southernmost of the Kerimba chain. From Arimba Head, off which it lies, there is a low, thickly wooded coast as far as Lurio Head ; thereafter it is moderately high to North Point, the bluff north of the entrance to Pemba Bay. South of this the land is again generally of moderate height, and the coast is fronted in places by a quicksand beach, while a reef, mostly steep-to, extends off the northern portion about  $1\frac{1}{2}$  mile.

### LIGHTHOUSES

*Cape Delgado*,  $10^{\circ} 41' 20''$  S.,  $40^{\circ} 38' 35''$  E. Near extremity of cape. White fixed light 66 ft. above sea, in black wooden tower 56 ft. high. Light visible 12 miles in clear weather. Unreliable, but reported to be working as from December 1, 1916. Keeper's dwelling, white masonry with zinc roof, adjacent.

*Ibo Island* (Mujaca),  $12^{\circ} 20'$  S.,  $40^{\circ} 39'$  E. On NE. side of Ibo Island. White fixed light 57 ft. above sea, in red iron tower on white masonry base 40 ft. high. Light visible 10 miles in clear weather. Unreliable. Keeper's dwelling, yellowish masonry, zinc roof, adjacent. Semaphore ; telephone to Ibo.

*Maunhane Point*,  $12^{\circ} 58' 45''$  S.,  $40^{\circ} 35' 30''$  E. White fixed light 80 ft. above sea, in white masonry tower 48 ft. high. Wooden building adjacent. Light visible 12 miles in clear weather. Semaphore ; telephone to Port Amelia.

*North Point* (Said-Ali), Pemba Bay,  $12^{\circ} 55' 48''$  S.,  $40^{\circ} 31' 18''$  E. White fixed light 51 ft. above sea, in red iron tower on white base, 34 ft. high. Light visible 10 miles in clear weather. Only shown when vessels are expected.

*Herbert Point*, Pemba Bay. Lighthouse reported under construction.

*Mpira Point*, 12° 57' 30" S., 40° 29' 45" E. ( $\frac{1}{2}$  mile NW. of Port Amelia, Pemba Bay). Red fixed light 48 ft. above sea, in black wooden tower 43 ft. high. Light visible 7 miles in clear weather. Only shown when vessels are expected. (Reported September 1915 in *Bol. Comp. do Nyassa*, Capitania dos Portos.)

#### COASTWISE AND INLAND NAVIGATION

Dhows and other small vessels serve the small ports along the coast which are not served by the larger steamers. Communications along the coast are carried on rather by water than by land; the coastal waters are in great part well sheltered for small vessels by reefs and islands, whereas the land routes along the coast are made difficult by the large number of streams and creeks to be crossed. No evidence is forthcoming as to the total number of small craft on the coast. In February–March 1915 there were 12 vessels (*lanchas* and *pangaios* or native sailing vessels), ranging from 14 to 47 tons, registered at Ibo.

The navigation of the lower Rovuma is discussed in the section of Itineraries, introduction to Route 1. The natives along this river and the Lujenda use their dug-outs skilfully, but not as a rule for long journeys, although references are made to the use of the Lujenda and lower Rovuma for native trade by water. No indication is given as to numbers of canoes. The possibilities of navigation are practically limited to these two rivers, and even on these they appear to be of little importance.

Dhows and canoes are used by the natives on Lake Nyasa. The Universities' Mission possesses two screw steamers (1915), the *Chauncy Maples* and the *Charles Janson* (commonly referred to as the C. M. and C. J.). The dimensions of the C. M. are given as—120 ft. length, 20 ft. beam, 6 ft. 6 in. draught; speed, 8 knots. The C. J. is an older and smaller craft. The Portuguese, so far as is known, have no vessels on the lake.



## CHAPTER VII

### MISCELLANEOUS

General conditions of health—Hospitals and ambulance stations—Diseases—Water-supply—British Vice-Consulate—Bulletin of the Company.

#### GENERAL CONDITIONS OF HEALTH

THE only trustworthy information available is derived from the reports of the Universities' Mission, mainly concerning the neighbourhood of Lake Nyasa, and the scanty statistics published by the Portuguese hospitals.

That the climate (excepting, perhaps, that of the hill country east of Lake Nyasa) is on the whole trying for Europeans is evidenced by the frequency with which officials of the Nyassa Company are reported absent on sick leave, and the rule recently adopted by the Missions to grant a holiday in England to all their workers on the completion of two years' residence in Africa.

It has been proved, however, that, with care and the adoption of proper precaution, tolerably good conditions of health can be secured. Actuated by these considerations the Portuguese Government in 1912 made certain recommendations to combat malaria and other diseases propagated by insects, drawing attention to the need of educating the natives and inducing them to pay more regard to hygiene. In the following year, police and sanitary regulations were enforced in the more important settlements, such as Ibo, Port Amelia, Palma, Mtengula, and Kwamba. In 1915 an elaborate system of registration and inspection of prostitutes was set up at Ibo and Port Amelia. Prostitution, except under licence, was declared a penal offence.

## HOSPITALS AND AMBULANCE STATIONS

At Ibo and Port Amelia hospitals have been in existence for some years. In 1913 a third hospital was opened at Mtengula to serve the *concelhos* of Lago, Amaramba, and Mtarika. The hospital of Ibo is by far the most important. During 1916 (January–October) the average number of inmates was 36 (including 7 white), whilst the number of out-patients averaged 1,900 a month. The hospital of Port Amelia was on a smaller scale and has published no returns after March 1914.

The Portuguese have also established ambulance or first-aid stations at every centre of a *concelho* and every military post, in which there is no resident doctor. The stock of drugs and surgical instruments is replenished monthly by the hospital authorities. It is larger at the centres of *concelhos* than at other posts. Mkoju, Kisanga, and Lurio, on account of their proximity to the hospitals of Ibo and Port Amelia, only receive the supplies allotted to minor posts.

According to an order dated November 27, 1912, the following supplies were to be kept available :

(A) Drugs	At centres of <i>concelhos</i> .	At other posts.
Picric acid . . . . .	100 grammes	—
Alcohol 90° . . . . .	500 "	—
Syringes of chlorhydrate of quinine (0.5) . . . . .	3 boxes	—
Syringes of camphorated oil . . . . .	1 box	—
Nitrate of silver . . . . .	10 grammes	—
Borate of sodium . . . . .	1,000 "	1,000 grammes
Essence of turpentine . . . . .	100 capsules	—
Chloroform . . . . .	100 grammes	—
Sulphur . . . . .	5,000 "	1,000 grammes
Iodoform . . . . .	100 "	50 "
Zinc oxide . . . . .	100 "	—
Antipyrine (0.324) . . . . .	100 tablets	50 tablets
Bicarbonate of soda (0.648) . . . . .	100 "	50 "
Bismuth (0.5) . . . . .	200 "	100 "
Bromide compound . . . . .	100 "	—
Chlorate of potassium (0.324) . . . . .	200 "	—
Chlorhydrate of quinine (0.324) . . . . .	400 "	100 tablets
Opium (0.065) . . . . .	100 "	—
Pernanganate of potassium (0.5) . . . . .	100 "	50 tablets
Salicylate of soda (0.324) . . . . .	200 "	—

	<i>At centres of concelhos.</i>	<i>At other posts.</i>
<i>(A) Drugs</i>		
Salol (0.324) . . . . .	100 "	—
Sublimate (0.5) . . . . .	200 "	100 tablets
Sulphate of quinine (0.324) . . . . .	100 "	50 "
Sulphate of zinc and cocaine . . . . .	100 "	—
Powder of carbon and quinquina (in equal parts) . . . . .	400 grammes	200 grammes
Sulphate of sodium or magnesium . . . . .	2,000 "	1,000 "
Tincture of iodine . . . . .	200 "	100 "
<i>(B) Dressings and accessories</i>		
Pins, ordinary . . . . .	20 grammes	20 grammes
Pins, safety . . . . .	6 "	—
Absorbent cotton-wool in packets of 50 and 100 grammes . . . . .	1,000 grammes	500 grammes
Bandages of cotton and gauze . . . . .	20 "	12 "
American sticking-plaster . . . . .	2 boxes	1 box
Silk thread No. 2 of Lister . . . . .	{ 1 card of 10 metres	—
Absorbent gauze, packets of 1 and 2 metres . . . . .	(quantity not stated)	—
Zinc irrigator (1 litre) . . . . .	1	—
Indiarubber syringe No. 5 . . . . .	1	1
<i>(C) Surgical instruments and accessories</i>		
Platinum needle . . . . .	2	—
Lancets . . . . .	4	—
Case of small surgical instruments . . . . .	1	—
Syringes for urethral injections . . . . .	4	2
Clinical thermometer . . . . .	1	—
Cupping glasses . . . . .	4	—
Measuring glass . . . . .	1	—
<i>(D) Pharmaceutical accessories</i>		
Enamelled iron receptacle (500 grammes) . . . . .	1	—
Dropping bottle (15 grammes) . . . . .	2	—
Spirit lamp with stand . . . . .	1	—

Drugs are sold to the public, but dispensed free of charge to the indigent and to officials of the Nyassa Company.

In addition to the above an increasing amount of medical work has of recent years been undertaken by the Universities' Mission. Sick rooms are provided at most of their stations near Lake Nyasa.

## DISEASES

Out of 487 in-patients (including 64 white) treated at Ibo hospital in 1915, 152 (including 3 white) suffered from skin diseases, 60 (1 white) from rheumatism, 52 (6 white) from syphilis, 24 (18 white) from fever, 11 (1 white) from tuberculosis, 9 (no white) from cancer, 3 (no white) from dysentery.

The returns of Port Amelia hospital for 1913 give similar proportions, except that an outbreak of small-pox accounted for 43 cases among the black patients, and skin diseases were not so prevalent. The total number of in-patients was 160 (17 white), out of these 15 (2 white) suffered from skin diseases, 15 (1 white) from rheumatism, 8 (2 white) from syphilis, 12 (11 white) from fever, 14 (1 white) from cancer, 1 black from dysentery.

The above figures show that the most usual complaint among Europeans is fever, by which must be understood malaria, the disease of the African tropics which causes the most disability. Native villages are usually infected, young children being seldom free from it. The disease is propagated by the *anopheles* mosquito. Experience has shown that cases of malaria are more frequent in the first six months of the year (maximum April-June) than in the last six. The last three months of the year, in spite of their being very hot and trying, are almost free from malaria. Several authorities on the route westward (inland) from Port Amelia remark upon the comparative scarcity of mosquitos and other insects.

Blackwater fever is a disease often fatal, and generally the sequel of neglected malaria, or the result of injudicious quinine dosing. Europeans appear to be most liable to this fever during the third year of their residence.

Sleeping-sickness, spread by a tsetse fly, appears to be fairly common near the Rovuma, but, as stated elsewhere, no case is known of the infection of a white man in the Company's territory.

Typhoid fever of late years has become fairly common both

among black and white. In the first instance it was probably imported from South Africa by persons returning from work in the mines.

Dysentery is rare, but occurs to some extent at the end of the dry season when water becomes scarce. (Water should always be boiled before use.)

Small-pox is common and very infectious.

Bilharzia and ankylostome do not occur to any great extent.

Chronic ulcers and sores, very prevalent in the early days among pioneer missionaries, have now been practically eliminated.

Skin diseases of various kinds, largely due to insects, are prevalent among the natives.

Venereal diseases attack many persons among the white population in larger centres. The police measures recently enforced by the Portuguese, and referred to on p. 98, may do something to mitigate the evil.

For a more detailed account of tropical diseases and of the preventive measures which should be adopted by Europeans reference may be made to *Hygiene and Disease in Eastern Tropical Africa* (I.D. 1055 A), issued as a supplement to the *Handbook of German East Africa*.

#### WATER-SUPPLY

At Port Amelia the supply of fresh water, at any rate until recently, has been indifferent. It has been obtained from tanks which fill during the rainy season, or from distillation. It is stated that the Portuguese expeditionary force, in 1914, were constructing a new system. Fresh water is to be found at a point west of Port Amelia, across Pemba Bay. Otherwise the surface water is generally brackish. The railway surveyors in 1912 believed that an artesian well about  $2\frac{1}{2}$  miles outside the settlement along the proposed route might give good results.

Water at Ibo is indifferent and difficult to procure, according

to the *Africa Pilot*, Part III, which indicates, elsewhere along the coast, wells at Ras Ulu and Kerimba Island, and a good supply at Mkufi.

Inland, it would appear that there should be as a rule little difficulty in regard to water-supply. As already stated, a considerable proportion of the many streams in the territory, if not perennial, either retain surface pools in the dry season, or yield water a short distance below the surface of their sandy beds. The Lujenda and Rovuma are perennial, and so are plenty of streams in the highlands west of the Lujenda ; but on the plateau east of the Lujenda and in the coastal belt, and especially, it would appear, in the north-east of the territory (Mavia plateau, &c.), there may be considerable tracts devoid of water in the dry season. Some accounts suggest that the Rovuma water may cause slight ill effects. Lake Nyasa is fresh. Native water-holes are mentioned on the Port Amelia-Mtarika route (see introduction to Route 30) ; they are bad.

#### BRITISH VICE-CONSULATE

There is a British vice-consulate at Port Amelia, with an acting vice-consul in 1916.

#### BULLETIN OF THE COMPANY

The official *Boletim da Companhia do Nyassa*, published monthly at Port Amelia, contains decrees and other official communications, periodical details of the work of the various administrative departments, &c., in Portuguese.

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## NOTE

L.=left. R.=right. M.=miles (statute, unless otherwise stated).

Altitude (alt.) is given in feet above sea-level, unless otherwise stated.



## ROUTE 1

### THE ROVUMA RIVER

#### THE MOUTH—NGOMANO, 152 miles

*Authorities* :—Livingstone, 1862, 1866 ; J. T. Last, 1885 ; Lieut. von Behr, *Mitteilungen aus deutschen Schutzgebieten*, vol. v, 1892 ; Berg, *Mitt. aus d. S.*, vol. x, 1897 ; *Africa Pilot*, pt. iii, 1915 ; F. Stuhlmann's map, 1:100,000, *Mitt. aus d. S.*, vol. x, 1897 ; German map, 1:300,000, *Karte von Deutsch-Ostafrika*, 1901.

This route follows the lower Rovuma river upward from the mouth, referring to points on both banks.

Navigation on the lower Rovuma is precarious. At high water European boats have succeeded in penetrating a few miles inland. But for longer journeys shallow boats which can be dragged over sandbanks are alone suitable. In September 1862 Livingstone ascended the river to a place just below Nyamatolo island, about 114 m. (?) as the crow flies from the coast ; the ascent occupied 15 days, and the descent 10 days. The river was unusually low, entailing frequent dragging of the boats over shallow parts. The river is highest in March and lowest about October. Native boats utilize it to some extent all the year round. With the tide they can always reach Migomba (Megombani), on the N. bank, about 5 m. from the mouth. Farther up sufficient water is always found for dhows, or native canoes, by means of which the products of the country are conveyed to the markets. According to Stuhlmann, shallow-draught steamers could navigate the river all the year round except from August to October.

Although there is no bar, the great depth of water imme-

diately outside the river, changing suddenly to 30 fathoms, causes dangerous overfalls, especially when the wind is blowing from the eastward. About 2 m. from the entrance the river is obstructed by sandbanks, which prevail throughout the lower course. The mouth of the river is subjected to constant changes, and there is a current of  $3\frac{1}{2}$  m. p. h.

The banks are steep, 12 to 16 ft. high, and overgrown with mangrove roots, behind which are stretches of jungle and swampy ground, making landing extremely difficult. The width of the river varies from about 700 to 1,100 yds. In the rainy season the river frequently overflows its banks.

The population is chiefly distributed along the banks of the river and on the islands, which are particularly numerous above mile 131. The valley of the Rovuma is hemmed in on both sides by steep slopes which form the edges of plateaux on the N. and S. banks of the river. Only a few miles broad near the mouth, the valley gradually widens as one proceeds up stream, and beyond mile 86 expands into a broad plain strewn with isolated granitic hillocks. The valley is mostly covered with long grass, except along the banks of the Rovuma and its tributaries, where tall trees are usually found. The neighbouring plateaux are overgrown with dense, almost impenetrable, bush vegetation.

The tributaries of the Rovuma, with few exceptions, are of the nature of mountain torrents, and quite dry for several months in the year. Some water can usually be obtained from the sandy beds. Before uniting with the main stream, these tributaries sometimes expand into lakes or lagoons, the resort of crocodiles and hippopotami.

The lower section of the Rovuma up to mile  $29\frac{1}{4}$  is in the German East African territory. Above that point the river forms the boundary between German and Portuguese East Africa.

A telegraph line from Palma to Ngomano follows the r. (south) bank of the Rovuma most of the way in Portuguese territory.

*Note on Distances along the Rovuma, and the Position of Ngomano*

Distances in the present and following routes along the Rovuma have been measured on the most detailed maps available, and principally on the German map 1 : 300,000. Such estimates of distance and marching time as have been furnished by travellers are also indicated, and have in some instances been preferred.

But a serious possibility of error is introduced by a conflict of evidence as to the longitude of the confluence of the Lujenda and the Rovuma at Ngomano. This important point was fixed by J. T. Last in 1885 at  $38^{\circ} 2' 56''$  E. long., in the course of his journey from Lindi up the Lujenda, and subsequently to Blantyre, &c.

The German map places Ngomano nearly 30' farther E., or approximately in  $38^{\circ} 30'$  E. long., although in the list of authorities and positions accompanying it Last's figure is given, and no reason is assigned for the departure from it. The German map is based partly upon the results and maps of certain investigators (of later date than Last) which appear not to have been published *in extenso*; it is impossible, therefore, to assess the value of the view taken by the German cartographers.

Last's original computations have been examined, and indicate a high degree of accuracy. His position for Ngomano has therefore been adopted in the sketch-map accompanying this volume. The measured distances between the coast and Ngomano, as given in the mileage columns of the itineraries below, will be underestimated if Last's position is correct, especially those in Route 1, where the course of the river is fairly direct. The distances between Ngomano and the point of Mitomoni (Route 5), which is fixed by the boundary survey, are not liable to be so seriously affected by this consideration, inasmuch as the river and routes are in any case more sinuous.

miles

- 0     **Mouth of the Rovuma.** The width of the river is about 1 m. between the trees on either bank. The entrance of the channel between **Ras Mwambo** to N. and **Ras Rovuma** to S. is not easily made out until abreast of it, and there are several smaller openings both northward and eastward of it. Direction SW.
- 2     Sandbanks begin and prevail most of the way. They render navigation intricate, the channel being narrow with a depth of only a few feet in places. **Mwambo**, a village on N. bank, from which a path leads NW. to Mikindani (see Route 9, m. 28); another path follows the N. bank of the Rovuma. On opposite bank is the village of **Fundi Uledi**. River bends WSW.
- 4     River bends SW.
- 5     **Migomba** (or Megombani), a village on N. bank at the foot of low hills. **Nkwawira**, a village near S. bank, behind which are found the lower spurs of the **Mavia** plateau. Highest point, **Kilima Mundo**, alt. about 330 ft. Several small streams descend through narrow gorges.
- 6     **Nakwa**, village on N. bank.
- 8     **Rukomba** (or Serenge) on S. bank.
- 10    **Kihongo** and **Osmani-Lihundi** on N. bank. River bends W. Hills recede from S. bank, leaving a wide alluvial plain covered with forest and grassland. The plain is crossed by the **Ruenda** (or Luyenda), a marshy stream, which runs almost parallel to the Rovuma and ultimately unites with the latter at this point.
- 12    **Katibu**, on N. bank. Hills forming the edge of the Makonde plateau draw near the N. bank and run at a distance of 1 or 2 m. from the river.
- 13    **Marunga**, on N. bank.
- 14    **Nkuyu** island near N. bank. River bends SW.
- 15½   **Abdurrahman** on N. bank. There is a conspicuous hill on the island in front of it.

miles

- 18      **Liwingo** and **Kaparamura**, villages on N. bank.
- 20½      A stream flows in from Lake **Chidya**, about 1½ m. off the N. bank. Bed of the river partially overgrown with rushes. Plateau to the N. of river is 200–300 ft. high, covered with dense bush and trees.
- 23      **Lihute** on S. bank.
- 24½      **Nkwenda** on N. bank.
- 26      **Mparara** (or Kwa-Fundi Ndumbo) on N. bank. Paths lead to Mikindani (see Route 10, m. 34½).
- 27      **Rovuma Lager**, a German military post, on S. bank. The river can be forded here in the dry season ; depth at low water about 2 ft. Some islands overgrown with reeds and shifting sandbanks. Path goes E. to Palma and Kionga (see Route 10, m. 35½, and Route 11, m. 2½).
- 29      **Hasani-Kumbukiri**, a village on S. bank connected with Rovuma Lager by a path running close to the bank. Ferry. River fordable at low water. **Mayembe** on N. bank. A path leads N. to Mikindani (see Route 10, m. 24).
- 29½      Portuguese territory is entered on S. bank.
- 31      **Chikoto**, on hilly ground off N. bank. The path, which up to this point skirts the N. bank, now recedes from the river and ascends the Makonde plateau.
- 35      **Chianga**, a small stream, flows in from N.
- 38      **Urongo**, another stream from N.
- 40      A path from Mikindani reaches the N. bank. (See Route 7 A, m. 46.)
- 41      **Mkokora** stream runs in from the N.
- 42      **Mbunga** on N. bank.
- 44      **Namikupa** and **Mihambwe** streams come in on N.
- 47      Direction SSW.
- 48½      Direction WSW. A river flows in from the S.
- 53½      **Mnari**, a village where some supplies could be obtained. Alt. 197 ft. For a few miles hills to the N.

miles

- recede out of sight. A river dividing into several arms joins from the N.
- 62     **Mtumbwi** (or Nangadi) stream flows in from Lake **Nangadi**, about 4 m. to S. Portuguese post and telegraph station at NW. corner of lake. Hills again draw closer to N. bank.
- 63     **Kikumbiliro** stream flows in from the N. through a swampy valley. A path from Nomanga descends the valley. (See Route 7 B, m. 63.)
- 66     Mouth of the **Ngapa** on N. bank. Hills to the S. gradually recede from the river bank, the level ground being covered with marshes and lakes abounding in fish.
- 69½     **Namkandi** river flows in from the N. in two main arms. **Nachucha** (Nachuchu) village about 1½ m. from N. bank.
- The country about here is comparatively open, but there are clusters of fine trees.
- 70½     A river flows in from Lake **Lidede**. This lake is about 2 m. to the S., and at m. 76 is connected with the Rovuma by another channel.
- 73     **Nkunya** stream flows in from the NW.
- 75     **Mkula** village on the N. bank. The river is fordable at this point. A path leads from the S. bank to Kwiganga and Kaluma. (See Route 14 B, m. 223.)
- 76     **Ntande** village on N. bank, enclosed by a strong stockade in 1866. **Mtumbwi** river flows in from S.
- 80     Hills again draw near the N. bank. Numerous torrents lead down from them.
- 84     **Kikundi**, a village on the N. bank. Alt. 262 ft. Hills recede in a northerly direction, leaving a wide plain stretching many miles N. and S. of the Rovuma. The plain is dotted with granitic hillocks. At Kikundi begins the **Mtawia** marsh, which skirts the N. bank of the Rovuma for some 5 or 6 m.

miles

- 86      **Nyuchi**, a village on the farther side of the Mtawia marsh.
- 87      A river flows in from the N.
- 89½      Sharp bend to S. in the river. **Nyamba**, village 1½ m. off the N. bank. Grass shorter and sparse.
- 93½      **Msimba** river flows in from the S. and another smaller river from the N.
- 95½      The river bends W. **Msimba**, a conspicuous hill on S. bank. The Portuguese post and telegraph station of **Mocimboa de Rovuma** appears to be near or on the hill. Route from Masasi and Newala to Kaluma (see Route 14 A, m. 190) crosses the river at this point. Fordable ?
- 97      **Nakalala** stream flows in from the N.
- 98      River bends WNW.
- 102      **Mkoo** stream flows in from the N. River bends W.
- 104      **Liponde** (or Iponde) village on N. bank. The granitic hill on opposite hill was called **Nakapuri** by Livingstone, but is marked **Lukombe** on the German map. A path leads NE. to Newala.
- 105      **Marekano** village on N. bank. River bends WNW. A path leads NE. to Newala.
- 107      **Mwiti** river flows in from the N. after passing through **Lichehe**, a small lake, about 2 m. to N.
- 108      River bends SW. A path goes NE. to Newala. (See Route 7 B, m. 110.)
- 109½      A river flows in from N., swampy near the confluence.
- 111      River bends W.
- 113      **Naunge**, village on N. bank.
- 113½      **Namahukudi**, a small lake off N. bank. The village of **Mweda** is about a mile farther inland, behind a belt of rushes which lines the river. Beyond the rushes crisp yellow grass is found and open forests, with here and there thick jungle on the banks of streams. All rivulets are mere mountain torrents filled with sand. On the S. bank is a hill called **Chipupu**.

miles

- 115      **Mparahanka** (or Lipulhanga or Kiparanganga) stream flows in from S. River bends NW. Hereabouts was the Portuguese post of **Matiu** (vacated before December 1916).  
River bends W.
- 116½      **Miesi** (or Miedi or Msedi) stream flows in from N.
- 119      River bends SW.
- 120      **Bangala** (or Mbangala), an important tributary, flows in from N. From the confluence a path leads NE. to Newala. (See Route 7 C, m. 122.)
- 125      **Mtawabawa** stream flows in from the N. and the **Matiu** from the S. Grass and rushes line the N. bank. Low hills skirt the S. bank.
- 130      River bends W.
- 131½      **Nyamato** island. The river bed, below the spurs of Kisulwe (or Chisulwe) hill, is rocky, the water rushing through numerous channels between rocky masses 4 or 5 ft. out of water. The rapids, known as the **Marumba**, Upinde, or Peters rapids, exceed 3 m. in length. The difference of altitude above and below the rapids is about 100 ft. Native pilots take small boats up and down the rapids, but the process is attended by considerable danger. From this point onward, numerous inhabited islands take the place of the sandbanks noticed farther downstream.
- 134      **Lugo** stream flows in from N. River bends SW. Villages on both banks.
- 135½      **Mbarapi**, a village on N. bank facing the conical peak of the Kisulwe (or Chisulwe).
- 136½      **Wangoni**, an important village on N. bank.
- 137½      **Makanya** stream flows in from N. and the **Ligonga** from the S.
- 143      **Ndechera** stream flows in from the N. and the **Likoha** from the S. **Namilema**, a peak at the confluence of Likoha.



miles

- 144½ The **Mpotola** flows in from N. The bed of the Rovuma is strewn with rocks for about 2½ m.
- 148 **Namakasi**, an isolated peak on S. bank.
- 149 **Nfualimo** (?), village on S. bank. Below the village a path goes ESE. to Palma. (See Route 8, m. 155.)
- 150 River bends W. It is about 800 yds. across, very shallow and full of shoals. A considerable number of water-buck, small antelopes, and guinea-fowl.
- 152 **Ngomano**. Confluence of **Lujenda** from S. (See Route 19, &c.) The name 'Ngomano' is said to signify 'confluence'. Portuguese post and telegraph station E. of the confluence. Alt. 730 ft. (?)
- On the position of Ngomano, see note in introduction to this route.

## ROUTE 2

THE ROVUMA RIVER (*continued*)

OPPOSITE NGOMANO (LUJENDA CONFLUENCE)—UNDI,  
77 miles. LEFT (NORTH) BANK

*Authorities*:—Engelhardt, 1897, and other authorities indicated on German 1:300,000 map; C. S. Smith, 1884; Berg, *Mitteilungen aus deutschen Schutzgebieten*, vol. x, 1897; Rev. W. B. Suter, 1910. Earlier authorities—Livingstone, Steere, Johnson.

The rivers and streams named in this route are tributaries of the Rovuma, and are therefore crossed by the route.

There is some evidence that the Germans have improved this route, from m. 6, as part of the route between Lindi and Sasawara.

miles

- 0 Opposite **Ngomano**. (See Route 3.) On the position of Ngomano, see note in introduction to Route 1.
- Between this point and the Lukwika river (below), among the water-courses crossed are the **Nangale**,

miles

10 ft. wide, and the **Lukula**, 20 ft. wide, in sandy bed ; banks 6-7 ft. high, wooded.

- 5     **Lukwika** or Rukwika river. (The distance from Ngomano is doubtful: it may be 9-10 m.) The Lukwika flows in a bed 100 yds. wide, dry in October, knee-deep in January ; banks about 3 ft. high.

Level monotonous country, grass and good trees. Range of vision  $\frac{1}{2}$  m.

Numerous water-courses are crossed, in addition to those named below.

The authority of 1884 crossed the Rovuma about 1 m. above the Lukwika confluence, near

- 6     **Namagono** villages (1897) on bank and islands. Route from Lindi and Masasi (see Route 6 A, m. 147).

- 7     **Miwuru** stream, 16 ft. wide.

- 9     **Nakombo** stream, 10 ft. wide.

- 10    **Ngamanga** villages (?) on bank and **Makandanye** island. (Opposite m. 10 in Route 3.)

- 12    Alt. 574 ft., opposite Kadyego hill. (Route 3, m. 12.)

- 14    **Lukwamba** river, 33-40 yds. wide.

- 16    **Mtondo** stream, 23 ft. wide. The country here is much broken by water-courses. The soil is better, and more highly cultivated, than higher up. The village of **Nanyundo**, mentioned by Berg, is in this neighbourhood. At the village the banks of the Rovuma are stony and very close to each other. Below the village the banks are sandy and about 110 yds. apart. Yao caravans usually ford the river at this point. Above this, for 2 m., the Rovuma widens to about 1 m., and there are large islands with villages of **Makochera** (1891). Many native boats were found here (1897). At the end of the dry season the Rovuma is also fordable at this point. From the l. bank a path goes N., then NE., to Masasi (66 $\frac{1}{2}$  m.) and Lindi (152 m.). See Route 6, m. 89.

miles

- 19 **Lukose** stream, 25–30 ft. wide. An authority of 1891 crossed the Rovuma near this point. The character of the country N. of the river in this locality is shown by Plates I, II.
- 21 **Namalonda** stream, 10 ft. wide. (Just below m. 19 in Route 3.)
- 23 **Mitungulu** river. (Just below m. 21 in Route 3.)
- 24 **Malikatombo** or Nakadyego stream.
- 26 **Limasule** river, 90 yds. wide. In October it has been found dry before reaching its point of confluence with the Rovuma, but water was obtained by digging holes in the sandy bed. Farther up it is rocky, with pools. (Opposite m. 24 in Route 3.)
- The river-side country here is a plain with sandy soil, stunted trees and thorny shrubs, but little undergrowth. The uplands to the north are open woodland.
- 33 The authority of September–October 1884 crossed the Rovuma here, the bed being  $\frac{1}{2}$  m. wide and the water flowing in a few shallow channels.
- 35 **Ngupe** or Mitesa river, one of the larger tributaries in this section. Many inhabited islands in the Rovuma.
- 37 Rapids.
- 38 **Mohezi** river, 70–110 yds. wide. 'Serious obstacle during heavy rain.
- 41 **Makamla** village (?). **Wadiani** or Wayaye stream.
- 43 Villages. **Nangale** island. (See Plate III.)
- 44 Rocky country : hills close down to the Rovuma. **Nangale** stream, 28 ft. wide.
- 45 **Mapanda** river, 21 yds. wide, banks 6 ft. Park-like country with rocky ravines to N. Rovuma bends S.
- Gorge of the Rovuma, 8–10 yds. wide, with sheer cliffs, between hills on either bank rising 330–400 ft. above general level of the valley. Above the gorge, river broadens to normal width.

miles

- 48 **Msiniawe** or Msinjewe river, 16 yds. wide, knee-deep (January), stony bed.
- 50 **Sunda** rapids in Rovuma. (Opposite m. 45 in Route 3.) Village and inhabited islands (rocky). **Mujindu** stream.
- 51 **Nakapoka** stream.
- 52 **Mpandira** stream. Villages above it. Rovuma 200 yds. wide and (September) very shallow.
- 53 **Mambezi** stream.
- 54 Alt. 920 ft. **Chavirongo** stream. **Dimbila, Gonji**, and other large islands in the Rovuma, extending for 2 m. up-stream.
- 55 **Mtotela**. Natural bridge from bank to Gonji island, 50 yds. long, 23–26 ft. wide.
- 55½ **Makandawela** stream.
- 56 **Nauseseмба** stream. The Rovuma above the islands is 200–250 yds. wide.
- 57½ **Mpitani** stream.
- 58 **Lutambo** stream, 10 ft. wide. Rovuma here 330 yds. wide. Above this for 3 m. are **Chosia** (r.), **Matanga** (l.), and other considerable islands, the Rovuma flowing in winding channels around them.
- 59 **Mtendachi** stream, 16 ft. wide, stony bed.
- 60 **Namadiani** stream. **Kininga** and other islands in Rovuma, which bends E. for 1 m.
- 61 Rovuma bends S. Rocky channel, 130–170 yds. wide. **Ihinda** island, and many others from this point upward.
- 62 **Chikururu** stream. Rovuma bends generally SW.
- 63 Rovuma 250 yds. wide.
- 66 Rocky bank. **Kipemba** island.
- In this neighbourhood (the exact position cannot be defined) the authority of 1910 found a settlement of Kandulu, an important Yao chief who migrated with Mtarika in 1909 from the Lujenda. (See Route 19, m. 143.)

miles

66½

**Chikunya** stream.

67

Rovuma 170 yds. wide, broadening to 320 yds. about a mile higher up. (Opposite m. 66 in Route 3.)

68½

**Likose** stream: bamboos and light forest up its course. Rovuma narrows to 140 yds.; then broadens to ¼ m., and narrows again to 250 yds.

71

**Mtorera** stream. Villages. (Opposite m. 71 in Route 3.)

72

**Mitando** island. Rovuma 110 yds. wide. **Kimgwelo** or Mwinga stream.

73

**Mwinga** island. (Opposite m. 73 in Route 3.) Rovuma 220 yds. wide above this.

74

Rovuma 330 yds. wide.

75

Rovuma narrows to 170 yds. Rocks, and islands with villages. **Chimwero** stream, 10 ft. wide.

76

**Nanjundo** rocks and island.

77

**Undi**. This name is retained, as it is an important point in earlier accounts and maps, and the Portuguese post opposite (Route 3, m. 77), established in 1911, was so called. But the authority of 1910 calls the place **Kumpelembe**, from a chief who moved here from the Mkula district (between this point and the Lujenda) in 1909.Alt. 1,080 ft. **Mapanga** island. (See Plates V, VI, VII.)

## ROUTE 3

THE ROVUMA RIVER (*continued*)

NGOMANO (LUJENDA CONFLUENCE)—OPPOSITE UNDI,  
77 miles. RIGHT (SOUTH) BANK

*Authorities* :—Livingstone, 1866 ; C. S. Smith, 1884 ; Smythies, 1887, and other authorities cited for Lujenda valley (Route 19).

The rivers and streams named in this route are tributaries of the Rovuma, and are therefore crossed by the route.

A Portuguese telegraph line from Palma was opened along this bank in 1914.

miles

0

**Ngomano.** Confluence of **Lujenda** river from S. (See Route 19.) The bed of the Lujenda is about 1 m. wide ; the river itself from 150 to 200 yds. wide (May), and small canoes are used upon it with much skill by the natives, both men and women (Livingstone). Another authority (May–June 1887), fording both rivers here, found them breast-high in places with rocky bottom and strong current.

On the position of Ngomano see note in introduction to Route 1.

1½

**Matumora** on l. bank of Lujenda.

Before the point opposite the Lukwika river (Route 2, m. 5) is reached on l. bank, the **Chipindimbi**, a considerable tributary from W., joins on r. **Lamba** village (?) beyond it.

Travellers' routes S. of the Rovuma do not appear to have run close along the river, but one or more miles S. of it.

7

Crossing of Rovuma at Namagono, to N. of route (see Routes 2, m. 6, and 6, A, m. 147). The distance from Ngomano is uncertain : it may be about 12 m.

miles

10      **Mekosi** village (?) S. of river. (Opposite m. 10 in Route 2.)

12      **Kadyego** hill on l. bank, N. of route. (Opposite m. 12 in Route 2.)

Country S. of river consists mainly of granite uplands covered with forest.

Livingstone in June 1866 recorded heavy marching through country almost waterless for the next 18 m., excepting one perennial stream (? the Mdomani, m. 28, below).

19      **Maliso** island: main channel of Rovuma on r. (S.) bank. (Just above m. 21 in Route 2.)

21      **Kibara** island: main channel of Rovuma on r. (S.) bank. (Just above m. 23 in Route 2.)

24      Above junction of Limasule on l. bank (Route 2, m. 26), **Likumbe** (Milungo) hill between route and river, **Chinentinde** and **Mkopo** (?) hills S. of route.

26      **Ngoli** hill (200–250 ft. above general surface level) S. of route.

27      **Mitete** hill between route and river, close to r. bank.

28      About 1 m. above m. 33 on opposite bank (Route 2), the **Mdomani**, a considerable tributary from S., is crossed.

The country S. of the river becomes 'craggy' and the route winding. Rocky hills rise more or less abruptly 100–300 ft. (?) above the general level, with higher hills to S., estimated by one authority at 2,000–3,000 ft. above sea-level.

38      Mt. **Mikangu**.

41      Gorge of the Rovuma (see Route 2, m. 45). The course of the Rovuma is now from S.

The authority of 1884 approached the Rovuma at Sunda rapids by a descent through a ravine.

45      The authority of 1884 reached **Sunda** rapids on the r. bank, and, viewing them in the dry season,

miles

describes a large rocky island with rapids on SE. side of it. (Opposite m. 50 in Route 2.)

Above the rapid is (or was) a village, **Mtwaro** or **Mpingawandu**. (See Plate IV.)

A considerable tributary from SE. is crossed : bed 100 yds. wide, dry in October. It joins the Rovuma some 2 m. to NW., opposite the tail of **Dimbila** island (Route 2, mile 54).

64 **Mnindi** (1884), **Namtweko** (?), villages 1 m. W. on river bank. The telegraph station of **Nandecoa**, opened in November 1914, should perhaps be identified with **Namtweko**. (The German map 1 : 300,000 is at variance with the authority of 1884 in distance between this point and m. 66, giving a distance of 4 m.)

66 **Kipupa** stream is crossed to **Kurora** (1884), off which lie islands and sandbanks in the Rovuma. (Opposite m. 67 in Route 2.) The authority of 1884 records the suffering of his party from colic, probably through drinking Rovuma water.

71 **Ulasi**, a considerable tributary from S. (Opposite m. 71 in Route 2.)

73 **Mkandangwo** stream. (Opposite m. 73 in Route 2.)

74 **Mkukwe** stream.

77 R. bank opposite **Undi** (see Route 2, m. 77). Former Portuguese post (established 1911).

## ROUTE 4

### THE ROVUMA RIVER (*continued*)

#### UNDI—SASAWARA RIVER, 58 miles

*Authorities*.—Engelhardt, 1897, and other authorities indicated on German 1 : 300,000 map ; C. S. Smith, 1884 ; Rev. W. B. Suter, 1910, &c.

Beyond m. 18 of this route practically nothing is known of the r. (S.) bank : the route, therefore, is described along or



near the l. (N.) bank only, with reference to features on the opposite bank where they occur.

On the r.-bank route a large number of small water-courses are crossed : only the larger, or those concerning which any particulars have been obtained, are mentioned below. The authority of 1910 found the country for the first few miles from Undi level and waterless (except for the Rovuma) in the second half of June.

A check upon the total length of this route, which is estimated here from the German map 1 : 300,000, is supplied by Suter (1910). He estimated his journey from the Sasawara river to Mtotela (Route 2, m. 55) at 89 m., his route differing in part from that described below (see note at end of route). The distance from Mtotela to Undi appears to be 22 m. (see Route 3), and from Undi to the Sasawara, as below, 58 m., total 80 m.

There is some evidence that the Germans have improved this route, as part of the route from Lindi to Sasawara.

A Portuguese telegraph line from Palma was opened along the S. bank to Maziwa in 1914.

miles

- |     |   |
|-----|---|
| 0   | <b>Undi</b> , alt. 1,080 ft. (cf. m. 3, below).   |
| 1-2 | <b>Makalonji</b> , <b>Chilawe</b> , and <b>Liweso</b> islands.  |
| 3   | <b>Kanyenda</b> (1897, but removed in 1910 : see note at end of route). <b>Namajongoro</b> island. Grave of chief under small shed, with offerings (1884).<br><b>Kangwanga</b> , on island (1884). Alt. 1,070 ft. at river-level. |

The authority of 1884 forded the Rovuma here on a ridge of rock providing a good crossing in low water (September), but probably an awkward rapid in high water.

Hereabouts is a good red soil, and country in 1884 was well cultivated on both banks and especially on the islands. Millet, Indian corn, rice, tobacco. 'Food is easily obtained, there having been no drought, but it is as dear as at Kilwa, probably

miles

because of the large number of caravans that pass through' (September 1884). From a German authority of 1894 it may be inferred that Undi and Kanyenda were no longer important crossing-places for caravans owing to the abandonment of the trade-route from Mesule S. to the Rovuma.

'The houses are round, built of wattle-and-daub, the roof a framework of bamboo thatched with grass.

'Small canoes are used with expertness by both sexes and all ages, but not for long journeys.'

- 4 **Usanama** island. Mouth of **Chulesi** river on r. bank (?).

**Mchenawa** stream : water in May.

Rapids in the Rovuma : **Mawa** island above.

- 6 **Lukumbule** stream, 22 ft. wide, 3 ft. deep, marshy (May).

Alt. 1,083 ft. The Rovuma is here  $\frac{1}{4}$  m. wide.

**Mpamba** island.

- 7 **Mpamba** stream and **Ndedele** island.

- 8 **Masendera** stream and **Msikisi** island.

On r. bank, **Namanii** stream and **Mchekwa** village (?).

- 10 **Mariumba** island and **Mitendawala** stream.

- 11 **Matibune** village (?). On r. bank, **Kisimambo** stream.

- 11-12 Three streams. **Masimbo** island, with villages (**Mchunda** ?).

Rovuma bends rather sharply SW. On r. bank, **Irongo** stream.

- 14 Rovuma bends W. Island. On r. bank **Chepalabile** village (?) and rock known as **Chocha**.

A Portuguese map of 1913 suggests that the post of **Maziwa**, established in 1911, was on r. bank in this vicinity, but the exact position is not defined, and the map cannot be relied upon. A telegraph line connects the post with Ngomano and Palma. Cf. m. 50, below.

miles

15 On r. bank, **Chiulesi** river, 30–40 yds. wide, knee-deep (May).

17 On r. bank, **Nasolo** stream, 25–30 ft. wide, ankle-deep, entering the Rovuma through more than one channel (?).

18 Villages of **Mpanda** or Mponda. (See Route 22 for route SW. to the Luchulingo valley, &c.).

**Kipande** and other islands.

Open forest country. (Cf. Plates VIII, IX.) Villages at intervals as far as m. 26 (1897). Numerous water-courses in addition to those named below.

Nothing is known in detail of the r. (S.) bank from this point.

21 Alt. 1,150 ft.

24 **Litipula** stream, 20 ft. wide, sandy : water in May.

25½ **Lugala** stream, 30 ft. wide, 1½ ft. deep (May), sandy.

29 **Nalumwale** stream, 22 ft. wide, and stony. Track followed by authority of 1897 is about 2 m. from the Rovuma here.

31 **Ushindu** stream, stony or rocky.

33½ Alt. 1,250 ft. Sandy stream-bed with little water (May). Steppe country with bushes and trees.

36 **Kuwibu** stream, 15–20 ft. wide, rocky : water in May.

39 Track has now approached the Rovuma again, but after crossing a stream called **Ligoola**, about ½ m. above its junction with the main river, it bears away. The Rovuma makes an elbow-bend SW. and NW. round a flat-topped eminence called Makwiru. This is some 3 m. SW. of the track, and midway between it and the track the considerable tributary **Luwingo** (below) joins the Rovuma through a grassy valley with reeds at the confluence. Track runs NW. parallel to and E. of the Luwingo.

42 Descend from alt. 1,360 ft. to 1,260 ft. to cross the Luwingo, bed 15–20 yds. wide, stream 20 ft. wide and

miles

knee-deep (May). It is here flowing ENE. and WSW. : track bears generally WNW. and W., about  $\frac{1}{2}$ –1 m. from the Rovuma. Grass land with open forest. Rovuma bank thickly wooded.

46 **Miabu** stream, 10 ft. wide.

50 Alt. 1,115 ft. at level of river, which is now approached closely.

On r. bank at or above this point the river **Maziwa** or **Majuni** probably joins the Lujenda from S. A Portuguese notice dated 1905 places a village of the same name on the E. side of the confluence, and a Portuguese report of an earlier year (1903) appears to confirm this, and proposes the establishment of a post. A post of Maziwa was subsequently established, probably here, but see under m. 14, above, and introduction to Route 23. The post was the terminus of a telegraph line from Ngomano and Palma.

**Namakumba** stream, 7 ft. wide, rocky. Bamboos.

51 From this point upward to end of route there is a succession of large inhabited islands.

52 Alt. 1,180 ft. **Ligologo** river, 20 yds. wide,  $1\frac{1}{2}$  ft. deep, banks 10 ft.

Channels of the Rovuma, about 140 yds. wide, surrounding islands.

**Nambato** island.

53 **Mchamba** (?) villages on islands and r. bank.

54 **Namabusi** island.

55 **Ngose** island.

56 Village of **Mtira** or Mtila according to earlier authorities : the authority of 1910 places Mtila village (with mosque) on the other side of the Sasawara. (See Plate X.)

58 **Sasawara** river. German post.

NOTE.—The authority of 1910, travelling from W. to E., describes the country E. of the Sasawara as 'a country of

large villages and *bara-baras* (highways)'. From the Sasawara he found two routes running E., an upper and a lower, of which the lower appears to be the route described above, as it is hardly ever more than 2 m. from the river. This route passes the village of Mtarika, an important Yao chief who came here in 1902 from the Lujenda. His predecessor in Livingstone's time (1866) lived on the S. bank of the Rovuma near Mpanda. The authority of 1910 followed the upper road through Kundenda to a village (with mosque) of Mataka, who came here from Mwembe about 1902, and was probably followed by a successor during the rising and migration of the Yaos in 1913. The authority then left the upper route, and passed SE. through forest to Kanyenda, 4 hrs. N. of the Rovuma, which village had been removed from the river-side (m. 3, above). Leaving this, he joined the lower road at Ngama, which may have been at about m. 19 of the route given above, but cannot be exactly located.

## ROUTE 5

### THE ROVUMA RIVER (*continued*)

SASAWARA RIVER—OPPOSITE MSINJE RIVER (MITOMONI), 131 miles. LEFT BANK AND NORTH THEREOF

*Authorities* :—Engelhardt, June 1897 ; Stierling, August and December 1900 ; Rev. W. B. Suter, June 1910 ; &c.

miles

0

**Sasawara** river. Sandy bed, 60–70 yds. wide, only a few narrow channels of water, knee-deep (June). Banks 5 ft. high.

Immediately above the Sasawara confluence the Rovuma passes over the **Bandara** rapids (Plates XI, XII). Above these is the confluence of the **Kisungule** river. The Sasawara district is thickly peopled.

miles

Mtila's village appears by the account of 1910 to have been between the Kisungule river and the Sasawara.

From here the Rovuma turns S. under Mt. Kisungule (alt. 2,300 ft., Plate XII). The route along the Rovuma is little used according to the authority of 1910; in fact, it is impassable except at the season when the grass is burned.

The usual route passes a good way N. of the Rovuma, but also through uninhabited forest, along the S. slopes of the plateau.

Leaving the Sasawara, route goes W. along the Kisungule over marshy land to a

- 5 Ford over the Kisungule (knee-deep, June). Alt. 1,670 ft.

Open hilly country with thin bush.

- 9 Crossing of **Mirola** (Matarawe) river immediately N. of Mt. **Mlunibiro**.

After passing through the bush for 2 m., route turns NW. through open country with grass and trees. It crosses the marshy valleys of tributaries of the Msangesi, of which the

- 18 **Litandi** (Matabende, 32 ft. wide, banks 9 ft.) is the most important. Route runs through hilly and fairly open country to

- 27 **Msangesi-Mlukubwa** stream (26 ft. wide, knee-deep, banks 9 ft.). Alt. 1,640 ft. Bamboos and high grass in valley. Through bush to

- 31 **Najaja**, a perennial stream 5 ft. wide. Alt. 1,850 ft.

Passing through marshy hollows the route enters the Makongondera (Likoti) hills and rises to an altitude of 2,060 ft.

The country is thinly wooded with occasional large clearings and many traces of former settlements. Here the route reaches its greatest distance of 23 m. N. of the Rovuma.

miles

- 36      **Msauesi** stream, bed 6 ft. wide, banks 5 ft. From here route passes through hilly bush-clad country to the
- 42      **Nkongo** (Mibure) stream. Alt. 1,920 ft.  
To W. of this stream routes separate, one going W. and N. to Songea (see note on Routes to Songea, 1, at end of this route), the other SW. and W. to the Lukimwa. This latter route passes along the southern edge of the plateau through the forest at altitudes varying from 2,000 to 2,150 ft.
- 49      **Kisimani**, a brook with water-holes. Thence over a hill and down to
- 55      **Ligunga** stream, bed 65 ft. wide, stream  $1\frac{1}{4}$  ft. deep,  $6\frac{1}{2}$  ft. wide. Alt. of slope E. of river 1,840 ft.  
The country is open, with thin bush.
- 57      **Ndewe** (Mgangwa) stream, 16 ft. wide, 1 ft. deep, a tributary of the Ligunga.  
Route then crosses other tributaries of the Ligunga, including
- 59      **Nusinga** stream, 9 ft. wide, with steep banks.  
These streams spring from the southern slopes of Mt. **Lisogo**, 2,800 ft. high. Route passes S. of the mountain at an altitude of 1,870 ft.  
The Rovuma, which made a great curve to the S. above the Sasawara confluence, has now turned N. again till it flows 3-4 m. S. of the route.
- 62      **Mlandu** stream. Three m. to the S., Mt. **Kimbanda** (Chimbandi) rises about 500 ft. above the Rovuma on its N. bank. Here there is an important (?) ford across the Rovuma. The route continues through more or less bush-clad country to
- 69      **Msangesi-Mdogo** (or Mbengei) stream, 23 ft. wide, 5 ft. deep. Alt. 1,840 ft.  
The bush gives place to open country.
- 71      **Litihi** stream (6-10 ft. wide, 3 ft. deep, slow current) is crossed at  $2\frac{1}{2}$  m. N. of its confluence with the

miles

Rovuma, which is here 90 yds. wide and 5 ft. deep, and flows swiftly in a rocky bed.

72 Route meets the path from Kimbanda ford (see under m. 62, above).

Route now turns NW.-NNW., keeping about 2 m. from the Rovuma.

75 **Mihango** stream.

78 Crossing of **Matanda** or Nangele stream, SE. of Mt. **Kwerenje**.

81 **Lukimwa** river, 40-50 yds. wide, crossed by a bridge.

Before the crossing, a route branches N. to Songea (see note on Routes to Songea, 2, at end of this route).

#### ROUTE A

The authority of 1900 went S. along the Lukimwa to the Rovuma, and saw the Rovuma again higher up, but practically nothing is known of its course from here to the Nangaho, and the distances are problematical.

84 Rovuma river at confluence of Lukimwa. Turn W. to

85 **Lupambo** river. Thence generally SW.

88 The Rovuma is here 70-80 yds. wide and unfordable in August, the depth exceeding a man's height.

99 **Humbuti** river?

106 **Mlongosi** river, an important tributary.

110 **Nangaho** stream.

#### ROUTE B

From Engelhardt's point of crossing the Lukimwa (above), his route proceeds WNW to

85 **Lupambo** river, here 10 ft. wide. Alt. 1,850 ft.

87 **Naniani** or **Matanda**, a small stream flowing into the **Lupambo**. Thence along its S. (r.) bank to

95 **Humbuti**, alt. 2,200 ft.



miles

Here Engelhardt's route turns N. to Songea (see note on Routes to Songea, 3, at end of this route), while Stierling's route proceeds W. to

97 **Humbuti** stream, here 20 ft. wide (December), and its tributary, the **Muahi**.

Thence W. and S. through villages of Kupunga people.

Route skirts the hills and crosses three affluents of the Mlongosi.

107 **Mlongosi** river, 40 ft. wide (December).

From here route follows the W. slope of the Mlongosi valley, crossing

110 **Msimenju** stream (26 ft. wide) and other tributaries. The country is here more open, with trees and thorn bushes.

117 **Nangaho** stream above its confluence with the Rovuma.

Mileage continued from Route B.

Route now follows l. bank of the Rovuma, crossing a number of streams, including

124 **Matanda** stream.

126 **Mipora** stream.

131 **Msinje** river: confluence with the Rovuma, on r. bank. Alt. 1,900 ft.

Former Portuguese post of **Mitomoni** at confluence.

German post of same name about  $2\frac{1}{2}$  m. NE. of confluence (l. bank).

Open country with thorn-trees. The district contained a number of Nyasa and Yao villages.

NOTE.—The authority who traversed this route in the reverse direction in 1910, describes one large village, Likalume, between Mitomoni and the Sasawara,  $1\frac{1}{2}$  day from Mitomoni.

He went along the river by Lisomba and Chamba, small Yao villages, and then finding the river path overgrown and

impassable at that time of year (June) he went N. through the forest and hit an upper road going from Lisomba to the Sasawara. Turning E. he passed a small village, Lupinda, and was then four days and three nights in the forest before reaching Mtila. He estimated the total distance between the Sasawara and Mitomoni at 145 m.

*German-Portuguese Frontier from Mitomoni to Lake Nyasa*

The German-Portuguese boundary runs from the confluence of the Rovuma and Msinje to Lake Nyasa at the mouth of the Kivindi, a distance of about 34 m. The line is marked by 26 stone pyramids 8 to 10 ft. high, and by clearings in the forest along the line wherever the ground allows it. The longitudes given below are approximate. The 26th pillar ( $35^{\circ} 27\frac{1}{2}'$  E.) is on a spit of land between the Msinje and the Rovuma. From here the line follows the course of the Msinje and the Kipingi river to the 24th pillar ( $35^{\circ} 22'$  E.) and thence over gently sloping ground varying from 1,970 to 2,300 ft. in altitude to the 20th pillar ( $35^{\circ} 17'$  E.). Here the ground rises and the line continues across wooded hills, reaching its highest point (over 5,600 ft.) at the 9th pillar ( $35^{\circ} 7'$  E.). The line comes down from the hills on to the Kivindi stream at the 2nd pillar and follows the stream to its mouth in Lake Nyasa. The first pillar is placed here almost a mile W. of  $35^{\circ}$  E. long.

*Routes Northward to Songea*

The times given between Sasawara and Songea are, for caravans, 9 days; for runners, 4 days.

There appear to be at least four routes connecting the route above with Songea, as follows:

1. From m. 42, above, a route runs at first W. and then NW., gradually diverging from the Mitomoni route, crossing the Lukimwa and its tributary the Likonde about the middle of their courses, and reaching Songea in about 137 m. from Sasawara.

2. From m. 81, above, a route turns N. up the Lukimwa

valley, crosses that river about 5 m. higher up, in about 23 m. strikes the valley of the Nyuga, a tributary of the Likonde and follows it for 25 m., thence reaching Songea about 65 m. from the parting of the tracks, or 146 m. from Sasawara.

3. From Humbuti, m. 95, above, a route runs N. by W., passing by the upper parts of the valleys of the Lupambo and Mlongosi, and reaching Songea in 55 m., or 150 m. from Sasawara.

4. There is a connexion between the lower Msinje valley and Songea. It is not clear whether it follows up the Rovuma direct from Mitomoni or runs W. of that river. But it appears to cross the Rovuma about 30 m. above the Msinje, and reaches Songea in about 85–95 m. from Mitomoni.

## ROUTE 6

### LINDI—NGOMANO (ON THE ROVUMA)

*Authorities* :—C. S. Smith, 1884 ; G. Lieder, *Mitteilungen aus deutschen Schutzgebieten*, vol. vii, 1894 ; German map 1:300,000 ; W.O. map 1:300,000, G.S., G.S. 3026 (1916).

With regard to the distances as estimated below, see note on distances and the position of Ngomano, in introduction to Route 1.

There are two important routes :

#### (A) *Via MASASI*, 155 miles

This route has the great advantage of avoiding the very high ground near Newala. It follows up the valley of the Lukuledi, then turns S. through the hilly district of Masasi, and proceeds SSW. along the Makwa hills to the Rovuma, striking the river a few miles above the confluence of the Lujenda. This appears to be the route usually followed by caravans going from Lindi to the Yao country and the Lujenda.

There is some evidence that the Germans have recently improved this route (or made one approximately following

this line) to the Rovuma, and thence up the river to Sasawara (see Routes 2, 4). As far as m. 89 it is said to be fit for light wheeled traffic.

miles

- |     |   |
|-----|---|
| 0   | <b>Lindi</b> , situated at the mouth of the <b>Lukuledi</b> . The river is navigable to some extent and instead of the land route described below, the waterway could be utilized for some 12 m. Thence striking W. the land route could be rejoined in the neighbourhood of the Kipanya district, m. 17. |
|     | The land route, leaving Lindi, crosses the hilly district to W.   |
| 4   | Route crosses marshy valley.  |
| 4½  | <b>Mtange</b> village beyond the marsh. Direction SW.   |
| 5   | <b>Mekonge</b> (or Mikonde) village.  |
| 6   | <b>Nguru-Mahamba</b> (Abed-bin-Rashid). Route crosses two branches of a small river and again enters a hilly district.  |
| 8   | <b>Mdenganamadi</b> village in <b>Mnenye Napa</b> district.   |
| 9   | Route crosses <b>Ngongo</b> river, and enters the <b>Nanekete</b> district ; alt. 197 ft.   |
| 11  | <b>Kitwene</b> village on bank of small river. A path goes E. to Mingoyo on the Lindi creek.  |
| 12  | <b>Mayami</b> villages.   |
| 13  | <b>Hassan-bin Ismail</b> village. Route crosses several streams.  |
| 13½ | <b>Ruaha</b> village. A path goes S. to the Lukuledi river, crosses it, and rejoins the Newala route in the Nankurdyulu district. (See Route 6 B, m. 44.) The present route continues SW.   |
| 17  | Route skirts the hills of <b>Kipanya</b> and winds considerably. Alt. 295 ft.   |
| 18½ | Route crosses the <b>Mandawa</b> , a small tributary of the Lukuledi. Route passes through dense forest and bush country ; general direction SW. over hills. Alt. 722 ft  |
| 26  | Route crosses the <b>Mbirambe</b> , another small tribu-  |

miles

tary of the Lukuledi. Beyond the river, path forks, one branch following the S. bank of the Lukuledi. Present route runs parallel to the N. bank along higher ground.

28      **Mitonga** hill to N.

31      Route crosses the **Muhengedi**, a tributary of the Lukuledi. **Liwegwa-Luanpara** village on opposite bank.

34      **Kiwaru** village on l. bank of **Kirumbe**.

37      **Manga** village. Route enters swampy country along N. bank of the Lukuledi. A path crosses the river and goes S. to Newala. (See Route 6 B.) Present route continues W. then SW.

38      Path forks ; both branches lead to Masasi ; l. branch crosses to the S. bank of the Lukuledi at Ngorombwe, and passes through Nyangao and the Kwa-Kapunde region. Main route follows the hilly country to the N. of the Lukuledi.

40½      **Mnawa**.

42      Route crosses the **Nyangao**, a stream 10-13 ft. wide, about 1 ft. deep, flowing S. into the Lukuledi.

44½      A path goes W. to Liyimbe. Direction SW.

45½      After crossing several tributaries route passes to the S. bank of the Lukuledi.

46      **Mehatwa**, villages, near marshy ground. The branches referred to at m. 38 meet again.

50      **Kitawara** village on the **Lideta**, a small river flowing N. into the Lukuledi. Path forks. The r. branch, direction SW., is more direct, but the l. branch, direction S., through **Hatia** (alt. 919 ft.) and **Mchiri**, appears to be in better condition.

54½      Branches meet again. Route crosses the **Muniburu**, a small tributary of the Lukuledi, near **Kwa-Dausila**. Beyond the village the path descends into low-lying ground overgrown with reeds, and continues to skirt a high ridge to E.

miles

- 57 Path crosses the valley of the **Nangoo**, thence proceeds along higher ground crossing numerous mountain streams. Alt. 984 ft.
- 62 **Nikunga**, a small village.
- 63 Route crosses the **Nahuwi**.
- 64½ **Ndanda**, numerous villages. A path continues W. across the Lukuledi to the town of the same name. Present route turns SSW. A better road passes slightly to the E. of the Ndanda and Hawara villages, rejoining present route at m. 67½.
- 66 **Hawara**, several villages on high ground, surrounded by open forest. **Mwena** district. Path crosses several valleys running S.-N., and reaches an altitude of over 1,000 ft.
- 72 **Chikukwe** villages situated between two branches
- 74 of a small river. A path goes WNW. to Lukuledi; present route turns SSW.
- 77 **Mutumbusi**. Several villages.
- 79 Route crosses the **Liloia**. A path goes NW. to Lukuledi and SE. to Mwiti and Kitangari. Route enters mountainous country.
- 82 **Mkera** (or Mkwera) village. Altitude exceeds 1,300 ft. According to the War Office map the village is on a hill, alt. 2,297 ft.
- 85½ **Masasi** town (alt. about 1,500 ft.) on S. slope of **Mtandi** (alt. over 3,000 ft.). It is reckoned 5 days' journey by caravan, and 3 days for runners, from Lindi. The English Mission station is on the N. slope of the mountain. A path goes SE. to the Chironda valley and Newala. (See Route 14.) Present route continues SW. then SSW.
- 87 **Natuli**, several villages.
- 89 Former station of the English Mission. Alt. 1,180 ft. The road followed up to this point is said to be fit for light wheeled traffic. It continues SW. to Mutumbusi (11 m.), and thence probably through Mtimbo

miles

- or Ntimbo (22 m.), Kunguni (30 m.), Kwa-Ngoriro (50 m.) to Makochera (63 m.) on the Rovuma. See Route 2, m. 16. Direction of present route SSW.
- 92     **Matawale.** Water found at N. side of a rock.
- 95     Route crosses the **Newadye**, a branch of the Ngupe.
- 96     Route crosses the **Ngupe** (Mduru), a tributary of the Bangala. In the next 15 m. the route crosses numerous tributaries of the Ngupe, as follow.
- 97     **Maliwangwa** stream.
- 98½    **Matandanyama** stream.
- 99     **Namame** stream.
- 101½   **Namassiago** stream.
- 102     **Mkassanye** stream.
- 103     A path turns off W., along N. slope of the **Massorore** (Massarola) mountain. The present route follows the S. slope.
- 106     **Massorore** village. Path turns S. over hilly country skirting E. bank of the Lukuru, a tributary of the Ngupe.
- 111     Route crosses the **Lukuru** river, and ascends hilly country on opposite bank.
- 114     Path descends a steep gradient to the **Bangala** river.
- 115     Route crosses river ; width 100–170 ft., sandy bed. On opposite bank path ascends the high ground and winds considerably. General direction SW.
- 118     Path bends S. passing between various hills : the **Nakakande** on the W. and the **Kulampembe** and **Marunguwira** on the E.
- 119     Direction SW.
- 122     **Nauru** and **Kirunda** (Maniuri), villages, surrounded by hills.
- 125     Route crosses the **Lugo**, a river flowing SE. into the Rovuma.
- 128     **Matindigo**, villages between the **Masurunu** and the

miles	<b>Lipanga</b> , two small rivulets which unite and flow into the Rovuma.
130	<b>Makalila</b> village.
131½	Route crosses the <b>Chiungutwa</b> , a river flowing SSE. into the Rovuma. Route ascends rocky slope on opposite bank and winds through hilly country.
140	Route crosses the <b>Lukula</b> , a tributary of the Rovuma, and numerous small water-courses.
144½	<b>Kalawile</b> village.
145½	Route crosses the <b>Lukwika</b> (Rukwika).
147	<b>Namagono</b> on N. bank of Rovuma and islands. (See Route 2, m. 6.) Route crosses the river and follows down the S. bank. (Route 3, m. 7.) Direction SE. Distance to the Lujenda uncertain: it may be as much as 11 m. Paths branch S. along l. bank of the Lujenda.
153½	<b>Matumora</b> on l. bank of the Lujenda. Route crosses the river and follows down r. bank. (See Route 19.)
155	<b>Ngomano</b> . Confluence of the Lujenda with the Rovuma. Portuguese post and telegraph station E. of the confluence.

(B) *Via* NEWALA, 156 miles

This route has many disadvantages. It crosses one of the worst stretches of the Makonde plateau, covered with very dense bush. There are hardly any villages, and water and supplies would be difficult to procure. The tracks of the plateau, however, are said to be passable for troops and bearers.

miles	
0	<b>Lindi</b> . (For details up to m. 37, see Route 6 A.)
37	<b>Manga</b> . Route goes S., crosses the <b>Lukuledi</b> river, and ascends the high ground beyond S. bank.
38½	<b>Mhutu</b> village.



miles

- 39½ **Makalanyi**, on a small tributary of the Lukuledi. Path ascends the hilly district of **Nambedu**, and enters the Makonde plateau, by a steep rise of about 300 ft.
- 44 Several villages of the **Nankurdyulu** district. A path which left main route at Ruaha (m. 13½) comes in from NE. Direction SSE.
- 45 **Mhoka**, last village on the plateau. Route winds in southerly direction through very dense bush with occasional glades of fresh green grass and some fine forest trees.
- 58 **Nantutuma**, a small village surrounded by dense bush.
- 61 Path descends into the **Kitangari** valley and skirts with many windings the S. side of the plateau. Glimpses of the lower country and of the Rovuma are occasionally obtained.
- 62 Path forks ; the branches meet again on the river bank. Present route follows l. branch.
- 65 **Simba** and **Hassani**, villages, beyond which route crosses marshy bed of the Kitangari.
- 66 Direction SW. along r. bank of river.
- 70½ **Nakam**, on l. bank.
- 72 Former English mission station. A path goes W. to Mwiti and thence to Masasi and Lukuledi. The present route turns S. and reascends the plateau near **Ndipe** hill. Another path leaves the river about 1 m. higher and meets main route again at m. 79.
- 78½ **Msalapaba**, a village. Level country with good red soil, partly covered with forest, the rest being cleared or under cultivation, but there is no water.
- 79 A path comes in from NNW.
- 80½ **Kiwambo**, a village.
- 82 **Mkanga** and **Naliogo**, villages. A path goes NW. to Masasi. The present route skirts the steep edge of the Makonde plateau. Direction SE. Some of the land under cultivation.

miles

87

**Kirindima** and **Manyamba**, villages.

88<sup>1</sup>

**Newala** (or Kwa Matola ?), important village, settlement of redeemed slaves, and English mission station. Highest point on the route, the altitude being about 2,330 ft. Extensive view of the Rovuma river (about 12 m. to S.) and plain. Water can always be procured in this neighbourhood.

Newala is reckoned as 6 days' journey for caravans, 3 days for runners, from Lindi.

From Newala numerous paths lead to the Rovuma, and several alternative routes are available. All are steep and difficult.

(For details from this point see Route 7 B or Route 7 C.)

156

**Ngomano.**

## ROUTE 7

### MIKINDANI—NGOMANO (ON THE ROVUMA)

*Authorities* :—Livingstone, 1866 ; J. Thomson, in *Proc. R. Geogr. Soc.*, 1882 ; Lieut. von Behr, *Mitteilungen aus deutschen Schutzgebieten*, vol. v, 1892 ; Berg, *Mitt. aus. d. S.*, vol. x, 1897 ; F. Stuhlmann's map 1 : 100,000, *Mitt. aus. d. S.*, vol. x, 1897 ; German map 1 : 300,000.

With regard to the distances as estimated below, see note on distances and the position of Ngomano, in introduction to Route 1.

Various routes can be followed. Distances measured on the maps.

#### (A) *Via* NDIDI AND MNARI, 158 miles

This path skirts the eastern slope of the Makonde plateau, a tableland which gradually rises from a height of about 200 ft. at the coast to over 2,500 ft. at its western limits.

<sup>1</sup> According to Lieut. C. S. Smith the distance from Lindi to Newala is 84 m.

It is formed of coarse red and grey sandstone, overgrown with bushes and creepers and dense masses of tangled vegetation, through which pathways have been cut. The paths are often a succession of low tunnels through the dense thicket. No large trees except near the nullahs which drain the country in the wet season, and usually retain a quantity of water in the dry season. This water is used by the natives. The soil is fertile in spite of the apparent absence of water. On the S. side the plateau rises abruptly from the bank of the Rovuma. After skirting the eastern slope of the plateau the present route descends into the valley of the Rovuma, and follows up the l. bank of the river.

miles

- 0     **Mikindani.** Here was a German military post on a small bay about 25 m. N. of the mouth of the Rovuma. There is a spacious and well-sheltered harbour, fringed by coral flats. Pop. estimated at 1,500, consisting of Arabs, Banyans, and natives. Few supplies : bad water. Dense tropical vegetation, in which the baobab is conspicuous. The adjacent country abounds in game, especially in neighbourhood of water-pools. The land to W. rises at once to 200 or 300 ft.

Direction SSW. through a valley covered with very high grass, well-wooded heights on both sides. Tsetse fly. Path ascends Makonde plateau, passing here and there through open spaces cultivated by the natives. An alternative route (Route 10) of about the same length goes S. over higher ground, then follows a valley running parallel with the present route, passes through Kitandahara, and rejoins present route in the Nandimbwe district, m. 22.

- 1     **Massananga,** village on rising ground. Route passes over hill (alt. 426 ft.) and descends into the valley.
- 3     **Milingwi** village (alt. 230 ft.). Path turns sharply W., then due S.
- 4     **Luelu,** a group of villages.

miles

- 5     **Mapingo** villages. Route crosses to l. bank of rivulet and passes over undulating ground.
- 8     **Yuguru**, villages in the **Ndenga** district. Alt. 410 ft.
- 9½    **Mahakata** village. Alt. 558 ft.
- 12    **Ntorya** village in the Kipangati district. Route passes through dense bush and bamboos.
- 17    **Nangruwe**, village in open forest ; pool to SE.
- 20    **Nandegwa**, village at the bottom of a valley, dense bush on both sides. Alt. 492 ft.
- 22    The alternative route through Kitandahara joins on l. (See Route 10, m. 14.)
- 23½   **Nanyawala** and **Kinyembe**, villages in the **Nandimbwe** district.
- 27    **Malamba** village. Alt. 574 ft. A path goes off in westerly direction, passing through Kimbioko in the Ntimbulimbwi valley, and Nankuku, rejoining Route 7 B at m. 40. The present route continues SW., winding considerably.
- 30    **Likolowera** village. Route passes through numerous villages, with *shambas* or cultivated fields.
- 34½   Direction S. A path goes off WSW. (See Route 7 B.)
- 37    Path leaves plateau and descends into the **Nanyamba** valley.
- 38    **Ndidi**, village on the river bank.
- 39    **Mbemba**, another village on the same river. A path comes in on E., from Mayembe, on N. bank of Rovuma. Route turns SSW. up the valley of the **Mtandi**, a tributary of the Nanyamba.
- 40½   Route turns S., ascending the plateau again.
- 41    Direction SSE. A path goes off SSW. (See Route 7 C.)
- 42    **Litumbo** (or Mpanyani), village on the edge of the plateau. Route descends into the **Mkokora** valley.
- 43    Path crosses the river bed and follows along the W. slope of the valley.

miles	
44	Direction SE.
45	Path again crosses the river bed, passing between <b>Namunio</b> on W. and <b>Dingende</b> on E.
46	Path reaches N. bank of Rovuma, $13\frac{1}{2}$ m. below <b>Mnari</b> , and continues along it in SW. direction. (For details from this point see Route 1, m. 40 onward.)
158	<b>Ngomano.</b>

(B) *Via NEWALA AND LAKE LICHEHE*, 154 miles

As far as Likolowera the route is identical with Route 7 A, but at mile  $34\frac{1}{2}$  it turns off WSW. across the Makonde plateau, reaching its highest point near Newala, and descending thence into the Rovuma valley. According to German reports of 1897, &c., the road was being improved all the way from Mikindani to Newala.

miles	
0	<b>Mikindani.</b> (For details up to m. $34\frac{1}{2}$ see Route 7 A.)
$34\frac{1}{2}$	Route branches off WSW.
36	<b>Kambembe</b> village.
40	A path from Kimbioko and Nankuku joins on r. (See Route 7 A, m. 27.)
41	<b>Nanyamba</b> (or Nauma) village (alt. 787 ft.) on the edge of a swampy valley of the same name. Path descends into the valley (alt. 607 ft.), and follows up the winding course of the river, called <b>Kitama</b> . General direction WSW.
43	<b>Namwanga</b> , village on the side of a marsh. Grass very high.
45	<b>Kitama</b> , village on the river of the same name Fine stretches of forest. Alt. about 690 ft.
50	<b>Madaba</b> , village on S. slope.
$51\frac{1}{2}$	<b>Mitepera</b> , village on N. slope.

miles

- 55      **Tandahimba.** The valley forks. Route continues WSW., then W. A path from Lindi comes in on N.
- 59½      Path turns SW. and ascends the plateau.
- 60½      Path turns S., then again SW. Alt. about 1,050 ft.
- 63      **Nomanga** (or Nahumangu) village. Beyond the village the route leads through thick bush and rises considerably. A path goes S. to Nkumba and the Rovuma, about 13 m. to S. (See Route 1, m. 63.)
- 71      **Likongolo.** Path follows the edge of the plateau and turns WSW. Alt. 1,624 ft.
- 73½      **Nandanga,** village to S. of path.
- 74½      A path goes in a westerly direction to Kwa-Kiyupa, and rejoins the present route at Newala. Direction S. Alt. 1,739 ft.
- 76½      **Namara.** A path continues S. to the Nkunya valley, and thence to the Rovuma. The present route turns W., through several villages.
- 80      Direction SW. Path rises gently for the most part.
- 83      Direction W. Paths go off SE. to the Nkunya valley.
- 83½      **Likuna** village. Alt. over 2,160 ft. Path continues to rise.
- 86      **Newala,** alt. about 2,330 ft. (See Route 6 B, m. 88.)  
Direction SW. Steep descent into the Chironda valley.
- 91      Old mission station. A path to Matora and the Bangala river goes off in westerly direction (see Route 7 C). The present route continues SW. along the high ground off the r. bank of the Chironda.
- 94      Path crosses the **Chironda** opposite **Nakalala** village. A path goes SE. to Mwawa, and reaches the bank of the Rovuma above Ntande. (See Route 14 B, m. 225.) Another path goes SSE., reaching the Rovuma opposite Msimba hill. (See Route 14 A, m. 190.) The present route goes SSW.
- 95      Route turns W., then SW. Another path con-

miles

- tinues SSW. via Mawa to Liponde on the Rovuma (distance about 13 m.).
- 97½ **Namateo**, a village on the **Nakalala** river (name of the lower course of the Chironda). Direction SSW. Path crosses several small tributaries and passes over difficult country.
- 99 **Mapwa** village.
- 100 A path goes S. to the Rovuma via Namombo and Mbili.
- 101½ Direction SW. Paths branch off in various directions : SSW. to Marekano on the Rovuma (distance about 7 m.) ; S. to Mbili (5 m.) ; N. to Matora (about 8 m.).
- 108 **Lichehe**, a small lake formed by the **Mwiti** river. A path goes NNE. to Matora. Route crosses the Mwiti below the lake.
- 110 N. bank of Rovuma. Route continues along it in a SW. direction.  
(For details from this point see Route 1, m. 108.)
- 154 **Ngomano**.

(C) *Via NEWALA AND MOUTH OF THE BANGALA*, 154 miles

This route is identical with Route 7 B as far as the upper Chironda valley below Newala, i. e. as far as mile 91. According to German reports of 1897 the road from the Mkoo river to the mouth of the Bangala was in good condition.

- 0 **Mikindani**.  
(For details up to m. 91, see Route 7 B.)
- 91 The present route turns W., passing over the hill (alt. 1,772 ft.) which divides the Chironda from the **Chitandi** valley (alt. 1,280 ft.).
- 96 **Myombe** village. A path NW.-SE. from Masasi to the Rovuma crosses the present route. (See Route 14, m. 215.)
- 100 **Matora**, numerous villages. A path goes N. through

miles

- a fairly populous district and joins the Masasi-Myombe path (Route 14 A) at m. 220. Two paths go S. in the direction of the Rovuma.
- 101 Route crosses the **Mkoo**, a river which flows S. into the Rovuma just below Liponde.
- 104 **Chingulugulu**, a village in open forest country. Alt. 771 ft.
- 105½ Route crosses the **Nasomba**, a tributary of the Mwiti.
- 107 Direction SSW.
- 110 Route crosses the **Mwiti**. Direction WSW.
- 113 Direction SSW.
- 114½ Direction WSW. and again SW.
- 118 Route crosses the **Miesi** (or Miedi or Msedi) river.
- 122 Mouth of the **Bangala** river. Route continues along N. bank of the Rovuma. (For details from this point see Route 1, m. 120.)
- 154 **Ngomano**.

## ROUTE 8

PALMA—NGOMANO, 158 miles

*Authorities* :—J. Thomson, 1882 (journey of August 1881); German map 1 : 300,000.

With regard to the distances as estimated below, see note on distances and the position of Ngomano, in introduction to Route 1.

The first section of this route, up to mile 102, lies along the Mavia (or Mabiha) plateau, the route following the edge facing the Rovuma river, of which an excellent view is obtained at times. The plateau rises in altitude, evenly though rapidly, as one travels westward, consequently the edge facing the Rovuma gradually increases in height and steepness. The plateau is mostly covered with dense bush, but along the edge and on the banks of rivers a fringe of forest is found. Beyond



mile 102 the route descends into the Rovuma valley, which broadens out into a vast plain studded with isolated granite peaks. The plain is almost uninhabited. Game is plentiful. Distances measured on the map.

A better path than that described below may lie along the telegraph line constructed by the Portuguese at the end of 1914. No details are available except that the line passes through Pundanhara, Nangadi, Mocimboa de Rovuma and Ngomano, at which places telegraph stations have been opened.

miles

- |    |  |
|----|--|
| 0  | <b>Palma.</b> Portuguese military post and telegraph station on Tunghi Bay, at the mouth of the <b>Meningene</b> (or Kichumbo). Route leaves the town in SSW. direction, following the estuary of the Meningene.   |
| 2  | Route crosses the river and ascends eastern edge of the Mavia plateau.   |
| 10 | Route crosses the <b>Milonchi</b> , a small river flowing ESE. into Maiyapa Bay.   |
| 13 | Direction WSW. Route passes near several small lakes.  |
| 23 | <b>Ngomanya</b> on N. side of <b>Kilembo</b> marsh.  |
| 30 | <b>Chimsaka</b> (Kwachemsaka). A path goes W. via Namiundo and Mkalani to the N. edge of the Mavia plateau. It rejoins main route at m. 56. Another path goes SSW., via Miula, Nachiva, thence W. via Mkopoka and Lishehe, thence down the valley of the Mwidi, where it rejoins main route at m. 65. Present route continues WSW. |
| 42 | <b>Marahunga</b> , marshy ground to N.   |
| 46 | <b>Msimati.</b> Direction SW.  |
| 51 | Route bends W.   |
| 56 | Path from Namiundo and Mkalani rejoins main route. The latter draws near the edge of the plateau and passes through the <b>Mienyere</b> (?) or Michinchi (?) district.   |
| 59 | Route descends to lower spurs of ridge and forks.  |

miles

One branch continues W. through Mlaba, then turns S. along the E. bank of Lake **Nangadi**, and rejoins main route at SE. corner of lake. Main route (as below) runs WSW. down a small valley opening into Lake Nangadi.

63 **Chipili** village in the valley.

64 Route crosses the river at SE. corner of Lake Nangadi, and meets path from Mlaba.

65 Route, after passing over a hill, descends into the valley of the **Mwidi** (Gweti), a river flowing N. into Lake Nangadi, and crosses the river opposite **Miwanga** (?). Path from Mkopoka and Lishehe comes in from S. Another path comes in from the E. and turns N. to the Rovuma, passing on its way the Portuguese post and telegraph station of **Nangadi**. (See Route 13, m. 160½.)

Beyond the village route reascends the plateau.

71½ Route descends towards the **Nenge** (Mtenji), a river flowing in a deep valley NNE. into Lake Lidede, and thence into the Rovuma. A path goes W. to Natiaka and Lake **Lidede**.

73 Route crosses the Nenge and reascends the plateau. Direction SW.

77 Route crosses the upper section of the valley of the **Mtumbwi**, a small tributary of the Rovuma. Kwiganga (see Route 14 B, m. 215) is about 6 m. lower down the valley. Route continues along the edge of the plateau, winding round its sinuosities and numerous gorges. General direction SW.

93 **Inmgwale**.

98 Route crosses the valley of the **Msimba**, a river flowing N. into the Rovuma. The confluence is NE. of Msimba hill near the Portuguese post and telegraph station of **Mocimboa de Rovuma** (about 15 m. to N.). Route turns S. up the W. slope of the valley.

101 **Madodo**. Route bends again SW.

miles

- 102      Route descends down the W. ridge of the plateau, into the plain, passing over numerous spurs to the S. of **Mtende**.
- 106      Direction W.
- 108      Route crosses a branch of the **Matiu**, a river flowing NW. into the Rovuma.
- 113      Route crosses Kisanga-Masasi route. (See Route 14 A, m. 140.) Direction WSW. over undulating country and across several small tributaries of the **Matiu**.
- 127      Direction WNW.
- 129      Route crosses a tributary of the **Matiu**.
- 133      Route crosses the Masasi-Mwalia route. (See Route 18 A, m. 138.)
- 137      Route crosses a branch of the **Ligonga**, a river flowing NNW. into the Rovuma.
- 140      Route crosses another branch of the same river.
- 146      Route crosses the **Likoha**, a tributary of the Rovuma.
- 151      Route crosses a hill. A path goes NNW. to the S. bank of the Rovuma.
- 154      At the foot of another hill a path goes SSW. to Ngomano; present route crosses the hill.
- 155      Route reaches S. bank of Rovuma W. of **Namakasi** hill, just below the village of **Nfualimo** (?). Route turns SW. up the bank of the Rovuma. (See Route 1, m. 149.)
- 158      **Ngomano**, Portuguese post and telegraph station. Confluence of the **Lujenda**.

## ROUTE 9

MIKINDANI—KIONGA, 40½ miles

*Authority* :—Mainly German map 1 : 300,000.

The path runs parallel to the coast, at distances varying from 3 to 6 m., and passes over the lower spurs of the ridge which bounds the Makonde plateau to the E. There are very few villages. In many parts the country is covered with dense bush. Water appears to be found at frequent intervals. On the S. bank of the Rovuma the path lies chiefly in low alluvial ground, and crosses several marshy rivers. General direction SE. Distances measured on the map. The route is reckoned as 3 days' journey for caravans, 1 day for runners.

miles

- |    |   |
|----|---|
| 0  | <b>Mikindani</b> (see Route 7, A, m. 0).<br>Direction E., skirting the bay.   |
| 1½ | <b>Mitengo</b> , village on the bay. Path turns SE. over hilly ground in the <b>Murungu</b> district.   |
| 3½ | <b>Abdallah</b> . Path crosses a succession of small valleys in the <b>Mtawanya</b> district.   |
| 6  | Water-hole to the E. of route on a path leading to <b>Manghanya</b> , a group of villages about 1 m. distant.   |
| 9  | Route crosses the <b>Lihakaya</b> , 10 ft. wide, and the <b>Nanyiriyiri</b> , about 17 ft. wide, and enters the hilly district of <b>Membe</b> .  |
| 12 | <b>Liule</b> , small lake to r.   |
| 13 | Path turns SSE. and crosses the <b>Kitowe</b> , a river 20–23 ft. broad. On the opposite bank path ascends to higher ground ( <b>Ntendachi</b> district), covered with dense bush and bamboo. |
| 14 | Direction SE.   |
| 15 | <b>Mahakaha</b> , a small village. Beyond the village the path descends again, through the <b>Ntamba</b> district.  |
| 17 | <b>Sefu-bin-Seliman</b> , village to l.; <b>Salim-bin-Salim</b> , another village, some distance to r.  |

miles

- 18½ Water-holes. Route enters the districts of **Namioka** and **Namwedo**, covered with dense bush.
- 24 Water-hole in the **Diramba** and **Naushwa** districts.
- 26 Route crosses the **Nindi** by a bridge. Beyond the bridge path turns E., through the **Lingwa-Ragwara** district.
- 28 **Mwambo** on the N. bank of the Rovuma, about 2 m. from the mouth. The river is filled with sand-banks and very shallow at low water, but dhows and even larger boats can always cross at high tide. Access to the river is difficult on account of the dense vegetation, especially mangrove roots, along the banks. Route crosses river in SSE. direction.
- 29½ **Fundi-Uledi** on S. bank of Rovuma, which presents the same aspect as the N. bank. Behind the fringe of dense vegetation, country is generally swampy. A path leads SW. up the S. bank of the Rovuma via Kisungure to Rovuma Lager. Present route continues SSE.
- 32 **Machinyilima**. A path goes off E. to a creek. Another goes W. to a water-hole.
- 33 **Lukulo**. A path comes in from NW. **Monao**, a small pool to the E. Route crosses the **Nandidi** district: rolling country.
- 35 Path lies over marshy country, and crosses the swampy beds of the **Makanga**, the **Mwango** and other rivers.
- 38 Path joins route from Hasani-Kumbukiri and turns ENE. (For details see Route 11, m. 30.)
- 40½ **Kionga**, German military post.

## ROUTE 10

MIKINDANI—PALMA, 64½ miles

*Authorities* :—F. Stuhlmann, *Mitteilungen aus deutschen Schutzgebieten*, vol. x, 1897, including map 1:100,000; German East Africa map 1:300,000.

The route is divided into two almost equal sections by the Rovuma. Both N. and S. of the river the path lies along higher ground mostly covered with dense bush, except along water-courses where a fringe of tall trees is generally found. North of the Rovuma it cuts across the east corner of the Makonde plateau; south of the Rovuma it follows the edge of the Mavia or Mabiha plateau. Water is said to be available at frequent intervals. Distances measured on the maps.

miles	
0	<b>Mikindani.</b> Route goes S. up steep slopes of the <b>Litangira</b> district.
2	<b>Mtima-Nundi</b> district, alt. 548 ft. Route ascends Makonde plateau.
4	Route descends in SE. direction into a deep valley and follows up the l. bank of the river.
7½	<b>Liwehe</b> , village on the l. or W. bank of the river.
11	Route crosses the river and ascends higher ground to the S. ( <b>Mundamkulu</b> district).
14	<b>Kitandahara</b> village to W. A path goes SW. through the village and joins Route 7 A at m. 22. Present route continues S. Water-hole to E. of it. Path through bush country.
18	Direction ESE.
19	<b>Nahunikira-Kungiri</b> village. Water-holes to S. Route turns SSW.
22	Route bends SE.
24	Path forks; SSW. branch leads to Mayembe on the Rovuma, opposite Hasani-Kumbukiri, where the river is fordable, and rejoins present route at Rovuma

miles

- Lager. (Distance from Mikindani to Rovuma Lager by this route, 38 m.) Present route turns ESE.
- 26 Path follows E. bank of Lake **Chidya**.
- 28 Path, near N. bank of Rovuma, turns sharply SW. and follows up the bank, keeping to the higher ground.
- 30½ Route passes to W. of the **Kitaya** lakes.
- 32 **Nkwenda** on the N. bank of Rovuma. Path continues along the bank.
- 34½ **Mparara** (or Kwa-Fundi Ndumbo). A path continues along the bank to Mayembe (about 2½ m. away). Just beyond Mparara route crosses the Rovuma. The river can be forded; depth at low water about 2 ft. Islands overgrown with reeds and shifting sandbanks obstruct the river bed.
- 35½ **Rovuma Lager** on S. bank. Alt. about 100 ft. German military post. The alternative route referred to at m. 24 rejoins main route. Route leaves S. bank of Rovuma and turns due E. and about one mile beyond enters Portuguese territory.
- 38 Route crosses the **Ruenda** (or Luyenda), a marshy stream running NE., bordered by woods on both sides. Beyond the river, direction SE.
- 39 Path leaves grassy valley of Rovuma and winds through forests up the ridge which forms the N. edge of the Mavia or Mabiha plateau. **Nyika**, a prominent hill to N.
- 40 On the plateau, alt. about 325 ft. A path goes E. to Kionga. (See Route 11.) Present route turns SE. following the edge of a gorge. **Mkubwita**, village ¼ m. away to SW.
- 40¼ **Nkandawidye** village.
- 40¾ **Nangore** village.
- 41¼ Path turns S. across upper end of gorge.
- 41½ **Makunguru** village.
- 41¾ Direction NE.

miles

- 42 Direction E.
- 42½ Direction NE. Path crosses fields of maize and beans.
- 43½ Direction E. Soil sandy.
- 44 **Mpangula** village. Direction SE.
- 44½ Direction NE., down the side of and across **Nyekumbo** (or Likumbo) gorge. A path goes SW. to Nalianga. The bottom of the gorge is only about 100 ft. above sea-level. Steep climb due E. up opposite cliff. The path lies now through thick bush vegetation. From the bottom of the valley a path goes NNW. to Nakwedanga, 1½ m. distant.
- 45½ General direction SE. Alt. about 360 ft.
- 46½ A path goes NW. to Nakwedanga, 2½ m. distant.
- 48 Path descends into marshy valley of **Dihimba**, follows the side of a marshy pond and ascends the plateau again. Another path follows the valley to Matakadau about 11 m. to NE. (See Route 11, m. 25.)
- 48¼ Direction E. through open forest.
- 48¾ Direction SE. Dense bush vegetation.
- 50 Path crosses the marshy valley of Makanga and follows the opposite cliff for nearly ½ m., then turns SE.
- 52½ **Kitumbi** (Kwa-Mparamanda), large village. The huts are square. Beyond the village the route turns NE. passing through two other small villages.
- 53½ Route passes over a hill. Very dense, almost impenetrable bush vegetation.
- 55¼ Path descends a slope, turns sharply to N., following foot of cliffs.
- 56 Direction E. Path descends into the swampy Chundi valley.
- 57½ **Chundi** (Kwa-Kitenga), village on spur to N. Alt. about 230 ft. Direction SE. along the W. side of the valley. A path from the Nambwe marsh joins on N., see Route 11, m. 23½. The Portuguese post



miles

of **Chunde**, about 3 m. ENE., was vacated before December 1916.

58½ Route passes over spur of cliff, then crosses the valley, and ascends the plateau on the opposite side, where it turns SSE. for ¼ m., then E.

60¾ Route crosses the **Mopwe**, a marshy valley.

62¾ Path descends E. ridge of the plateau, passing **Mamungu**, a village at the foot of the ridge. Direction SSE.

64 Path descends into the rice fields.

64½ **Palma**, Portuguese military post and telegraph station on Tunghi Bay, at the mouth of the **Meningene** (or Kichumbo).

## ROUTE 11

HASANI-KUMBUKIRI (ON THE ROVUMA)—KIONGA,  
32½ miles

*Authority* :—F. Stuhlmann, *Mitteilungen aus deutschen Schutzgebieten*, vol. x, 1897, and map 1:100,000.

For the first 6 m. the route lies in the grassy plain near the S. bank of the Rovuma, then by a steep path it ascends the N. ridge of the Mavia plateau, and continues along it all the way to Kionga. The plateau generally slopes down to the coast, so that the ridge near Kionga is less formidable. The region traversed is on the whole well cultivated, and villages are fairly numerous. Except from m. 3½ to m. 13½ the route lies outside Portuguese territory. Distances measured on the map.

miles

0

**Hasani-Kumbukiri** (see Route 1, m. 29), village on the S. bank of the Rovuma. River fordable at low water; ferry. Mayembe on opposite bank. Route follows S. bank of Rovuma. Direction NE. Some fields under cultivation. Tall trees screen the river.

miles

- 2½ **Rovuma Lager**, German military post on the Rovuma. Alt. about 100 ft.  
(For details from m. 2½ to m. 7, see Route 10, m. 35½ to m. 40.)
- 7 Direction E. A path to Palma turns off SE.
- 8¼ Direction N.
- 9¼ Direction SSE. The ground to N. is about 400 ft. above sea-level.
- 10 **Kayawa** village. Direction NE.
- 11 **Mchinyi** village.
- 11½ Direction E., through maize fields.
- 12 **Nakwedanga** village. Hereabouts was the Portuguese post of **Naquidanga**, vacated before December 1916. Two paths lead from the village ESE. and SE. to the Palma route, see Route 10, m. 44½, and m. 46½. Direction N.
- 12¾ Direction NE.
- 13¼ Route crosses the **Nyekumbo** (or Likumbo), a marshy valley. At the bottom of the valley the path re-enters German territory. Path ascends opposite ridge and continues to skirt the N. edge of the plateau. Dense bush vegetation with a clearing here and there.
- 15¾ Path turns N. and passes through a village. Some fields under cultivation.
- 16½ **Kiwembe** (Kwa-Nampaka), alt. about 360 ft. Direction ESE. Many fields under cultivation.
- 17 Direction NE.
- 18½ Direction ENE. Path, through more open forest, follows the S. ridge of the **Kindari** valley, then descends into and crosses the swampy valley of **Dingili**.
- 19¼ **Nakupike** (Kwa-Nampaka) village. Direction NE., through bamboo forest and bush country.
- 21¼ Direction E., then SE. down into the swampy valley of **Ndikila** and up again on opposite side.
- 22 Direction ENE.
- 23½ **Nambwe** marsh to the NE. of route. A path goes

miles

- SSE. to Chundi, see Route 10, m. 57½. Fields and sandy soil in neighbourhood.
- 24½ Route descends into the swampy valley of **Makanga**.
- 25 **Matakadau** village at the bottom of the valley, alt. about 65 ft. A path goes SW. to Dihimba. See Route 10, m. 48. On the opposite ridge route lies across undulating country partially under cultivation.
- 27 **Kipala** village.
- 27½ **Mkuti** village. A path goes SE. to Liunguti pond and Mbwisi. Route lies through hilly country.
- 28½ Direction ESE., through open forest.
- 29½ Route crosses the swampy valley of **Mirui**. At the bottom of the valley route turns NE. and on the opposite plateau again E.
- 30 A path from Fundi-Uledi comes in from NW. (see Route 9, m. 38).
- Direction ENE. to the bank of the **Mto Kionga**.
- 30½ Path descends from high ridge.
- 31 Path crosses the swampy valley of **Tunsima**, about ¼ m. wide.
- 32½ **Kionga**, German military post.

## ROUTE 12

## KIONGA—PALMA

Authority :—F. Stuhlmann, *Mitteilungen aus deutschen Schutzgebieten*, vol. x, 1897, and map 1 : 100,000.

There are two routes, one following the sea-coast, the other passing inland. Distances measured on the map.

## (A) ALONG THE COAST, 18½ miles

miles

- 0 **Kionga**. German military post. Direction SE. On leaving the town the route crosses the swampy valley of **Kitamitemwere**, and ascends the lower ridge of the plateau.

miles

1½ Route turns E. through the village of **Tetemwe**. Some mango and cocoa trees near it.

2¼ Route crosses the marshy valley of Tetemwe, and reascends the plateau covered with low bushes.

4 Path descends to the low-lying littoral, passing through cultivated fields. Direction SSE.

4½ **Kilindi**, village on the coast. Beyond the village the route lies along the strand. Direction almost due S.

7¾ **Mbwisi**. The village is some distance inland; a ruinous stone building stands on the shore. Route passes SSW. through the village, then turns SSE., passing through hilly country. A path goes ESE. in the direction of Cape Delgado, some 5 m. distant. Another path goes in a westerly direction to Mambanana (1½ m.) and Liunguti pond (about 4 m. NW.).

8½ Route enters Portuguese territory; a boundary stone is ¼ m. farther S.

8¾ A path continues due S. to **Tunghi** or Kiwiya, a settlement on the coast (1½ m. distant). Route turns W. at sharp angle.

9¼ Direction SW., along the E. side of **Nyundu** marsh.

10½ Two paths go N. to **Mambanana** (2 m.). Direction S.

11 Path leaves plateau and descends again into low-lying littoral, covered with grass, swampy in parts, wooded along the coast. Direction SSW.

12¼ Direction SW.

13½ Mouth of **Mlunga**. The rest of the way the path lies along the strand.

15 Two huts on the coast; route crosses estuary of **Murwe** Creek.

17 **Karibuni**, village on the coast.

17½ **Meningene**. The settlement extends along the coast to

18¼ **Palma**, Portuguese military post, and telegraph station.

(B) THROUGH THE INTERIOR,  $13\frac{1}{4}$  miles

On the map this route appears somewhat shorter than Route A, but the country is more difficult, being covered most of the way with dense bush. Beyond m. 3 the direction is only approximate.

miles	
0	<b>Kionga.</b> Direction S.
$\frac{3}{4}$	Route crosses the marshy bed of the <b>Kitamitemwere.</b>
1	A path crosses the route, it goes W. to Mkuti ( $4\frac{1}{2}$ m.), and E. to <b>Tetemwe</b> ( $1\frac{1}{2}$ m.).
$1\frac{1}{4}$	<b>Mwende</b> pond to the E. : hippopotami.
$2\frac{3}{4}$	Path forks ; 1. branch goes to <b>Liunguti</b> pond ( $1\frac{1}{2}$ m.) and Mbwisi (about 6 m.). Route follows r. branch. Direction SSW.
$3\frac{1}{2}$	A path crosses route. It goes NW. to Mkuti (6 m.) and ESE. to Liunguti pond (1 m.).
$4\frac{1}{2}$	Route ascends plateau. Direction S.
$8\frac{1}{2}$	Route descends again to coast land.
12	<b>Karibuni</b> , village on the coast. Here Route A is rejoined.
$13\frac{1}{4}$	<b>Palma.</b>

## ROUTE 13

KISANGA—MKULA (ON THE ROVUMA), about  
176 miles

*Authorities* :—L. H. L. Huddart, MS. maps and report, 1906-7 ; Vilhena, 1905 ; *Africa Pilot*, pt. iii, 1915.

From Kisanga to Mkoju (29 m.) the path is not marked on the maps. But there are a number of fairly important settlements, and it appears that there is a tract (*estrada*) all along the coast. The going is heavy in parts, over sandy soil. The journey in this section could also be conveniently undertaken by boat.

Up to m. 43 the route follows the littoral, and (approxi-

mately) the telegraph line, but beyond that point it ascends the Mavia plateau, and crosses the NE. corner of it. Finally it descends into the valley of the Rovuma, where it links up with various routes. Distances measured on the maps.

miles

0      **Kisanga**, a town situated near the extremity of a fertile peninsula, bordered by mangroves. Pop. about 2,000. It is separated from the island of Ibo, on which is the important settlement of the same name, by a channel scarcely navigable for canoes at low water.

A telegraph line goes N. to Palma, another S. to Lurio and Mozambique, while a short cable connects Kisanga with Ibo.

The position of the path is uncertain up to m. 24. It has been assumed that it follows the coast-line. Direction W.

4      Direction N.

5      Route crosses the **Orguwa**, a small river flowing E. into the sea.

?      **Kipanda** village.

9      Route crosses the **Pombi**.

?      **Esse** and **Mussamuko**, villages. The Portuguese post of **Mussemuco** was vacated in April 1916.

11      Route crosses the **Sammo**.

14      **Kramakoma**, a river with a Portuguese settlement of about 600 at its mouth.

18      **Olumbwa**, Portuguese post on the S. bank of a small creek. The post is frequented by native traders.

20      **Kirinuzi** (Kirimizi ?), on opposite bank, a village of better appearance, huts well built. Cattle and some supplies can be procured. Promontory known as Kirinuzi Point (in Portuguese, Ponte de Quirimizi). From this point onward up to Pangane the coast is much higher. Country covered with palm-trees.

?      **Estare**, **Matana**, **Nafundika**, **Namikopo**, **Simbolongo**, **Mussama**, villages along the coast.

miles

- 27      **Sangane** Point, low, white, and sandy, with a reef extending nearly 2 m. off it.
- 29      **Mkoju** (Mucojo), small village of about 100 huts on both sides of a small creek. Portuguese military post, under a European officer. Telegraph station and post office.
- ?      **Funzi**, village.
- 33      **Changane**, Portuguese settlement : pop. about 300. There are a few substantial stone houses. N. of **Pangane** Point the shore is low, sandy, and bordered by mangroves.
- 34      **Mgwani** village.
- 43      Path turns inland. Leaving hills near **Ras Pekawi** (Pequeue) to the E. it reaches higher land, passing to the W. of a ridge, the highest point of which has an altitude of 285 ft.
- 52      On the E. slope of the range is **Kiteraju** with a Portuguese post (Quiterajo), a telegraph station and a post office.
- 57      Path winds round NW. extremity of range.
- 59      Route crosses the **Msalu** (or Marari). Path continues inland along higher ground.
- 89      Path turns NE., and descends to the littoral.
- 94      **Mtamba**, village on the S. side of **Mazimbwa** bay. The port of Mazimbwa (Mocimboa) with a Portuguese military post, a telegraph station and a post office, is on the N. side of the bay, and separated from Mtamba by a creek. Path follows along the bank of the creek.
- 99      **Nakiza**. Path bends W. and reascends the plateau. Dense bush, except in the valleys and along the edges of the plateau where tall trees are generally found. There is reported to be a track (*estrada*) northward by the coast to Palma.
- 106      Direction WNW.
- 112      Route enters hilly district.
- 125      **Mahinji**. There is a pond SE. of the village.

miles

- 134 **Machemba**, Portuguese post.
- 145 **Mavanga** village. Direction WSW., then W.
- 155 Route descends from the plateau (**Ivanga** hills).
- 158 **Msamala** (or **Haramba** ?). Path forks. One branch continues WNW., crosses the Mwidi, meets a path coming down the valley from Lishehe, and rejoins main route near Lake Nangadi. Present route turns NNW., crosses three small tributaries of the Mwidi.
- 159½ Route passes a village and bends NW.
- 160½ Route approaches Lake **Nangadi**, and crosses the swampy ground at the mouth of the **Mwidi**. In this neighbourhood, or possibly higher up the Mwidi, the present route crosses a path going ENE. to Palma and SW. to Ngomano. (See Route 8, m. 65.)
- 161½ The path referred to at m. 158 rejoins main route. Direction NW. The path runs at a short distance from the shore of the lake, and passes over spurs of the Mavia ridge.
- 161¾ Route crosses a small river (dry in October) which flows into the lake.
- 164½ Route crosses another small river (dry in October).
- 166 Route crosses the **Mwiha**, a small river flowing NE. into the lake.
- 167 **Nangadi**, Portuguese post, and telegraph station. A path continues due N. to the Rovuma (about 4 m.). Present route turns W.
- 171 Route crosses a river connecting Lake **Lidede** with the Rovuma, and proceeds along N. side of lake.
- 173 Route crosses another river flowing from the lake into the Rovuma.
- 176 Route strikes the S. bank of the Rovuma opposite the village of **Mkula**. For the crossing of the river at this point see Route 14, m. 217.



## ROUTE 14

## KISANGA—MASASI

*Authorities* :—Rev. C. Maples, *Last Journals and Papers*, 1899 (journey of August 1881); German map 1:300,000; *Africa Pilot*, pt. iii, 1915; *Boletim da Companhia do Nyassa*, passim.

In August 1881 the Rev. C. Maples covered the whole distance in 18 days. The country does not appear to present any great difficulties, considering that the party, worn by a long journey and suffering from fever, was able to maintain an average of 14 m. a day. Compared with the map the distances indicated by Maples would appear to be somewhat overestimated, especially S. of the Rovuma.

(A) *Via MSIMBA HILL*, about 254 miles

miles

- |    |  |
|----|--|
| 0  | <b>Kisanga.</b> (See Route 13, m. 0.)<br>Route leaves in a westerly direction, rising from the littoral to the higher land.  |
| 15 | <b>Karawa.</b> Direction WNW.  |
| 27 | <b>Mwojia.</b>   |
| 37 | <b>Mkapa.</b>  |
| 42 | <b>Macomia,</b> Portuguese post, to E. of path.  |
| 45 | <b>Namaru,</b> small Yao town on W. slope of hills.<br>Many Makonde settled in neighbourhood. Beyond the village path turns in northerly direction.  |
| 61 | <b>Nikungu,</b> a Makonde village.   |
| 68 | <b>Lalama,</b> Portuguese post some distance to E., vacated before December 1916.  |
| 74 | <b>Mkoroma</b> (or Nkoroma, or Nasombe). Route turns NW. through hilly district.   |
| 92 | <b>Chae,</b> Portuguese post some distance to E., on the slope of a range skirting S. bank of the Msalu (or Marari) river. Beyond this range route descends into the valley. Slopes of the valley well wooded. |

miles

- 98 Route crosses the **Msalu** river. Native caravans avoid the route N. of the river, because they fear the marauding habits of the Mavias. The country is hilly.
- 110 **Mchilimba.** Route skirts the W. ridge of the Mavia (or Mabiha) plateau and enters the plain. The latter is dotted with isolated granitic hills.
- 118 Route crosses the **Lipwedi**, which further S., after its junction with the Hopa, flows into the Msalu. A path goes SW. to Chihora-Veni, and NE. on to the Mavia plateau. (See Route 17, m. 61.)
- 126 A forest.
- 140 ? **Mtende**, a hill to N. A path goes ENE. to Palma and W. to Ngomano. (See Route 8, m. 113.) Another path goes S. to Mwalia. (See Route 18 B, m. 114.)
- 146 Route crosses the **Matiu**, a river flowing NW. into the Rovuma.
- 161 Route crosses the **Mparahanka** (or Lipulhanga), another tributary of the Rovuma. Its course runs parallel to that of the Matiu. According to the German map, the rivers are about 5 m. distant, not 15, as stated by Maples.
- 174 **Kipiranganga** (Kaluma). Here again the distance from the Mparahanka is, according to the German map, 3 m. instead of 13. Route passes over low hills. Alternative Route 14 B turns off NE.
- 190 Route reaches S. bank of **Rovuma**, W. of **Msimba** hill. According to German map, the distance is 9 m. instead of 16. **Mocimboa de Rovuma**, Portuguese post and telegraph station, some distance to the E. Route crosses the Rovuma. (See Route 1, m. 95½.) River-bed about 1 m. broad (2 m. according to Maples). Route continues in northerly direction.
- 194 Route crosses small tributary of the Rovuma, and continues along undulating ground.
- 210 **Nakalala**, a village on the S. bank of the **Chironda**

miles

(called the Nakalala below the village). Paths radiate in various directions. (See Route 7 B, m. 94.) An alternative route goes NE. along the steep path to Newala, then after about 4 m. turns NW., skirting the high ridge which forms the W. border of the Makonde plateau. It passes through difficult mountainous country, and rejoins main route on the N. slope of Nairombo-Mkumbwa hill (m. 240). The main route on leaving Nakalala bends WNW., crosses the Chironda, and continues in the plain, skirting the lower spurs of the Makonde ridge which towers to the E.

211 Route crosses the **Chitandi**, a tributary of the Mkoo. Direction NNW.

215 **Myombe**. Route crosses a path leading from Newala in the E. to the mouth of the Bangala river, on the N. bank of the Rovuma. (See Route 7 C, m. 96.) Direction NW.

220 Route crosses the upper part of the **Mkoo** river, and enters country covered with fine open forests. A path goes S. through a populated district to Matora, and thence to the Rovuma.

223 Route crosses the **Nagaga**, which flows WSW. into Lulindi, itself a tributary of the Mwiti. Opposite bank, alt. 984 ft.

225 Route crosses the **Nopo**, another small tributary of the Lulindi.

227½ Route crosses the **Lulindi**, about 19 ft. wide.

229 Route crosses a tributary of the Mwiti.

231 Route crosses the **Mayembe**, another tributary of the Mwiti. Alt. on N. bank about 885 ft. The high ridge of the Makonde plateau gradually recedes to N.

232 Route crosses the **Uchinde**.

233 Route crosses the **Mwiti** and follows up the r. bank.

236 Route crosses a branch of the Mwiti and turns N. on rising ground.

miles

- 240 **Nairombo-Mkubwa**, a hill to E., alt. about 1,590 ft. Alternative route referred to at m. 210 joins main route on N. slope of the hill. Route bends WNW., and crosses the **Mlundelunde**, a river which flows SSW. into the Miesi, itself a tributary of the Rovuma.
- 243 Route crosses the **Mumoaka-Mkubwa**, another tributary of the Miesi, and passes over a well-wooded hill, in the **Mumbaka** district, alt. about 1,300 ft.
- 245 A path goes NW. to Lukuledi.
- 246 Route bends WSW. through the **Mkunda** district.
- 250 **Churvishi**. Direction NW.
- 252 **Natuli**, villages. Route enters higher ground.
- 254 **Masasi** (alt. about 1,500 ft.), on the S. slope of **Mtandi** hill (alt. over 3,000 ft.). The English mission station is on the N. slope of the mountain.

(B) *Via* MKULA, about 314 miles (?)

This route is identical with Route 14 A except for the section between Kipiranganga (Kaluma) and Nakalala. The Rev. C. Maples followed it in June 1881, on his journey from Masasi to Mwalia. It is considerably longer, and does not seem to present any advantages except that at low water the Rovuma is easily fordable at Mkula.

The distances are those given by Maples ; they appear to be largely over-estimated.

miles

- 0 **Kisanga**.  
(For details up to m. 174, see Route 14 A.)
- 174 **Kipiranganga** (Kaluma). Route turns off NE.
- 177 Makwa population ends and Mavia or Mabiha population begins. Path ascends high ground, the last spurs of the ridge which limits the Mavia plateau in the W.
- 182 **Mkoba**, a Mavia village on the high ground. From

miles

heights outside the village a fine view is obtained of the plain and across the Rovuma to Masasi.

184 Route crosses the valley of the **Msimba**, a river flowing N. into the Rovuma. Path continues along lower spurs of Mavia ridge, and passes through cultivated fields (*shambas*) and numerous villages. (In 1881 Maples counted 21, each of about 60 souls in 18 round houses, and encircled by a large *boma*.)

195 **Nechilem** village. (On the German map the distance from Kipiranganga to Nechilem is only 13 m.)

203 Route crosses small tributary of Rovuma (not marked on German map).

211 **Niakta**, a village on E. bank of the **Lidede**. The latter is a broad stream which flows N. into the Rovuma. It narrows considerably at the village. Crocodiles plentiful. Path follows a short distance along the E. bank of river, then continues NE. over a hill (**Kikundi**?).

215 **Kwiganga** on the W. bank of **Mtumbwi**, a sluggish stream, deep and full of crocodiles. It flows N. into the Rovuma. River crossed by a ferry.

Route passes through a number of miserably built villages of Matambwe people, chiefly living on fish and fast becoming extinct.

217 S. bank of **Rovuma**. Bed of river filled with sand-banks. At low water the river is fordable; maximum depth (4-5 ft.) near S. bank. According to Maples, the river at this point is nearly 5 m. in width, possibly intended as an estimate of the width of the flat valley-bottom. The country is low and flat, overgrown with long grass, and studded with various kinds of palm-trees. Crocodiles, hippopotami, and other game plentiful.

223 **Mkula** and **Mkombota**, two villages on N. bank. (On the German map the distance from Kipiranganga

miles	to Mkula appears to be only about 30 m., instead of 49.) Route turns SW. along the N. bank.
225	<b>Ntande.</b> Path gradually recedes from N. bank of Rovuma, crosses several small streams flowing from the high ridge which borders the Makonde plateau on the S. side.
249	Route turns sharply NW. and ascends lower spur of Makonde ridge. (On the German map the distance from Mkula to this point is only about 14 m., instead of 26.)
257	<b>Mwawa.</b>
270	<b>Nakalala</b> on the Chironda. (On the German map the distance from the bend at m. 249 to Nakalala is only about 10 m.) Route rejoins Route 14 A. (For details beyond m. 270, see Route 14 A, m. 210.)
314	<b>Masasi.</b>

## ROUTE 15

### KISANGA—PEMBA BAY, 49 miles

*Authorities* :—Stevenson-Hamilton, 1908 ; Vilhena's map, 1904 ; Admiralty Chart, No. 1,809.

The maps by the authorities of 1908 and 1904 are not in agreement as regards the names and positions of villages.

There is said to be a made track (*estrada*) along the coast, and there is a telegraph line. The going along the track is heavy in parts, over sandy soil.

miles

0

**Kisanga** (see Route 13, m. 0).

Route leads generally S. by W. to S., keeping fairly close to the coast and passing a number of villages, e. g. **Nava** (m. 2), **Napuda** (m. 3), according to Vilhena's map ; **Napa** (m. 5), **Mati** (m. 7), according to Stevenson-Hamilton. About m. 4 the Miringwe stream is crossed.

miles

- 8 Crossing of the **Mtepwezi** river near its mouth in the bay of the same name. Villages and plantations beyond it. Route followed by Stevenson-Hamilton runs generally S., attaining a distance of 10–12 m. from the coast.
- 10 Crossing of the **Matlanhimbo** stream.
- 22 **Nakoba**. The **Ehari** forest, of African teak and bamboo, is traversed.  
Route runs through or near villages (1904) of **Mpopia** (m. 28), and **Tatakoto** (m. 31). Other villages to E., near coast. Cross water-courses.
- 36 **Mueve**, Portuguese post, established 1908, near northern shore of Pemba bay.
- 39 Crossing of **Luriti** (Eurite ?) stream.
- 41 **Mwambi**, village and landing-place on W. shore of Pemba bay.
- 44 **Mupumba** village and stream.
- 49 **Mwagidi** river, which flows into **Pemba Bay**. Up its valley runs Route 30 from Port Amelia to the interior.

## ROUTE 16

IBO—MEZA, 119 miles

*Authorities* :—Gueit, November 1899—February 1900 ; Branco, October 1901 (quoted by Vilhena).

The two authorities (the second of whom started from Kisanga) do not appear to have followed exactly the same route, as their intermediate points cannot, in most cases, be correlated.

The track is indifferent, especially in the vicinity of Mt. Podo. Branco found water at all his halting-places except Abdallah. Gueit refers to shortage of water at the end of the dry season between m. 90½ and 119, but not elsewhere.

The distances without query are according to Gueit's

estimates of stages, which do not always agree with his map, from which the queried distances are adapted.

The authority of 1901 remarks that copper, cotton, and red cloth are accepted by the natives as payment, but not beads.

miles

0 **Ibo**, on the coast. Cross island and lagoons to  
 9½ **Kisanga**. Proceed over rather broken country, fairly wooded with coco-nut palms, cashew trees, &c. Pass **Nsomero** village.

16 **Meranga** river.

19 ? **Mavulo** (? Mahate of the authority of 1901, 3 hrs. from **Kisanga**).

22 ? **Mavirano**. Ground again somewhat broken.

24 ? **Digo**.

29 ? **Bitogo**. Approaching the **Mtepwezi** river, the country becomes more densely wooded.

30 Crossing of **Mtepwezi** (Montepuez) river from l. bank to r.—by a bridge according to map of 1904 and an earlier authority, but none is mentioned by the authorities cited above.

Authority of 1901 gives 6 hrs.' march from **Kisanga** (not **Ibo**).

**Namikute** village on r. bank of the **Mtepwezi**. Passing it on r. (S.), route proceeds past Lake **Dabai** on S., and above the S. shore of the larger Lake **Biribizi** at an altitude of about 330 ft. Hereabouts is the Portuguese post of **Biribizi**.

The ground about the lakes is low and liable to flood in the wet season : the soil is black and fertile. Fish, crocodiles, and hippopotami in Lake **Biribizi**, and much small game was seen in the neighbourhood.

Beyond the lake the vegetation is less rich.

56 Mt. **Podo**. Alt. at foot, 600 ft.

Authority of 1901 gives 8 hrs.' march from **Namikute**, passing **Kagavero**, 2 hrs.

Bad track, ascending to 1,300 ft. (the summits of



miles

- the hills being over 1,650 ft.), and then descending to
- 63½ **Moneta**, alt. 750 ft. Ground rather broken ; hills between which the tracks wind : on his return journey the authority of 1899 followed a slightly different line to the E. of the present route.
- Small streams separated by rocky ridges. Thin vegetation : bamboos near streams.
- 82 **Mt. Nikaida**. Alt. on track, 1,130 ft.
- 90½ **Nimgonya** river, alt. 1,280 ft. A difficult stage follows, with water scanty in the dry season, but probably to be obtained by digging. Cashew trees and bamboos.
- 106 ? **Mwibana**, alt. 1,590 ft. Rich vegetation.
- 119 **Meza**. Alt. about 1,300 ft. Join Route 30 (at m. 90), from Port Amelia to Mtarika.
- The authority of 1901 gives the following stations and intermediate marching times from Mt. Podo :
- Namikuto, 2 hrs.
- Namajate, 3½ hrs.
- Natulo, 1½ hrs. Rock with cistern on S. side.
- Nimgonya, 8 hrs.
- Abdallah, 5 hrs. No water.
- Meza, 3½ hrs.

## ROUTE 17

**CHIHORA-VENI—MAVIA PLATEAU**, about 70 miles

*Authority* :—L. H. L. Huddart, map 1:250,000, 1907.

This route leads from Chihora-Veni on the N. bank of the Msalu NE. through the plain, and thence up the W. ridge of the Mavia plateau to Muriapachi. From that point it would seem that a path goes E. down the valley of the Mwena, or along the N. bank of the Msalu, to Maleli or Marari near the mouth of the Msalu, but the path is not marked on the map. Distances measured on the map.

miles

- 0      **Chihora-Veni**, village on N. bank of **Msalu** river and to the W. of **Koronji** hill. The Portuguese military post of **Coronje** appears to be in this neighbourhood.  
(For details up to m. 18, see Route 18 B, m. 180 to m. 198.)
- 18      Route turns off NE.
- 31½      Route crosses the **Majani**, a small river which flows NE. into the Mwiriti.
- 32½      **Majani**, a Yao village on l. bank of river. A path goes W. to Nasombi and SSE. to Ngumbi and Pombelli-Wandu. (See Route 18 B, m. 156.) Another path goes E. to the Msalu (7 m.) and up Ncherwe, a hill on the S. bank of the river.
- 36      Route crosses the **Mwiriti**.
- 37½      Route crosses the **Mhiru**. The rivers unite about 3 m. to S. and ultimately flow into the Msalu.
- 40½      **Maundi** rock. Water found here.
- 48      **Asrirupe**, a Makonde village.
- 53      **Majeji** (Tambinga) on the S. bank of the **Hopa**, a river flowing SE. into the Msalu. Route crosses the river and continues NE.
- 58      **Mutigamba** (Ntivera). Path forks; one branch goes N., crosses the Mweda, a tributary of the Hopa, and climbs the ridge of the Mavia plateau to Makopira or Mchulu (about 17 m.). Present route follows the other branch in NE. direction.
- 61      Route crosses the **Lipwedi**, a tributary of the Hopa, and follows up the l. bank. A path goes SE. to the Msalu river and Kisanga and NW. to the Rovuma. (See Route 14, m. 118.)
- 62½      Route crosses again to r. bank, and passes over a hill.
- 64      Route crosses another branch of the Lipwedi and rises through a gorge on to the Mavia plateau.
- 70      **Muriapachi**, a village on the W. edge of the plateau.

miles

A path goes NW. through Nteunga, Msowala, and Didango, to Makopira (distance about 10 m.). From Muriapachi eastward no details are available. Judging from the map the mouth of the Msalu appears to be about 60 m. to E.

## ROUTE 18

### MASASI—MWALIA

*Authorities* :—Rev. C. Maples, *Last Journals and Papers*, 1899 (journey of June–July 1881); German map 1:300,000, 1901; L. H. L. Huddart, maps 1:250,000 and 1:1,450,000, 1907.

#### (A) *Via* CHE-CHIWARU, 303 miles

From Masasi to Kipiranganga (Kaluma), on the S. side of the Rovuma, the route is identical with the last section of Route 14. Beyond this point the path lies alternately through *msitu*, thick tangled forest and brushwood with overhanging creepers and no grass, and *mwitu*, i. e. forest where trees are more sparsely growing—no creepers, no shade, and very long grass. Here progress is faster, and the path straighter. The distances are those given by Maples, but they appear to be considerably overestimated.

miles

0 **Masasi** (alt. about 1,500 ft.) on the S. slope of **Mtandi** hill (alt. over 3,000 ft.). The English mission station is on the N. slope of the mountain.

(For details up to m. 80, see Route 14 A, m. 174 to m. 254. By following Route 14 B the journey, according to Maples' data, would be lengthened by about 60 miles.)

80 **Kipiranganga** (Kaluma). Path leaves in a WNW. direction, then runs mainly W. or WSW.

96 Route crosses the **Mparahanka** (Lipulhanga),

miles

a river descending from the Mavia ridge and flowing NW. into the Rovuma. Country sparsely inhabited; water and food difficult to procure.

106 Route crosses sandy bed of the **Matu**, a river running parallel to the Mparahanka. In the dry season some muddy water is obtained by digging in the sandy bed.

114 Route winds round N. foot of the **Mbundi** (or Nambiti), a conspicuous hill, and continues SW.

127 **Mkonona**, a Makwa village. General direction due S. through dreary and uninteresting country. Large tracks are under cultivation. Many Makonde villages with extensive *shambas*.

138 A series of wells, 6 to 8 ft. deep. On the whole, water is very scarce. Path goes E. to Palma, W. to Ngomano. (See Route 8, m. 133.)

144 Route passes through bamboo groves and tall grass.

155 Watering-place at small Makonde village. Route continues through bamboo groves and grass.

169 Large flat stones in which several large, naturally formed basins contained sweet cool water. Beyond this point route crosses the watershed of the Rovuma basin.

175 Route crosses dry bed of the **Mwiriti**, a river flowing ESE. into the Msalu. Fine trees overhang the banks. The bed is about 15 yds. wide and appears to have a good volume of water in the rainy season. Fair amount of land under cultivation, separated by forest.

195 **Che-Unde.**

205 **Che-Nchine.**

210 **Che-Chiwaru**, a large village in a hilly district. The **Nikoche** rocks are to the S. of town. Extensive view from these rocks (400–500 ft. above the plain); country the same in every direction: stunted forest, with rocks and huge granite boulders, some bare,

miles

some covered with trees. The village appears as an oasis in an otherwise bare and unproductive region. Beyond it only rare patches of cultivated land, on which some millet and Indian corn is grown. Hills visible in the distance : WNW., the S. spurs of the Mkanje, running N.-S. along the E. bank of the Lujenda ; S., numerous hills of the Meto country.

225 Route crosses the **Msalu** (also called Mkalu, or Marari). Level bed of gravelly sand, nearly dry in July. Huge trees overhang the banks. The river winds NE. towards the sea-coast. Route enters the **Meto** district.

229 Route crosses the **Mwedi**, a river which winds its way to the confluence of the Msalu. Route crosses the river three times in succession (Maples took these for three different branches).

244 Route enters a hilly district. **Nikokwe**, a range of high granitic hills. Route passes to E. of highest peak (alt. about 4,000 ft. or 2,000 ft. above neighbouring plain). Numerous Makwa villages are situated at the foot of these hills. Population 1,000-2,000. Hereabouts is the Portuguese military post and telegraph station of **Nicoque**. The land is unusually fertile, and remains so up to Mwalia. Supplies plentiful. Cashew trees cultivated, from the fruit of which a strong spirit is distilled. Route continues through cultivated fields, studded with crags and rocks. Numerous Makwa villages in groves of cashew trees

259 **Kawariya**. Mwalia hills visible to S.

274 **Mwenja**.

277 Route crosses the **Mtepwezi** (Montepuezi, Montepes), a river running ENE. to Kisanga. In July the river was quite dry. The deeply cut channel is about 10 yds. broad. Beyond the river fine picturesque country, where no trees but the mango, the cashew, and coco-nut palm are allowed to grow. Route passes

miles

- through a fine valley, 8 to 10 m. broad, with range of hills on either side.
- 298     **Mkaya**, a village situated in the valley. Wide expanse of country visible beyond.
- 303     **Mwalia**, Portuguese post situated in the valley of the **Muhubwa**. Hill to S. called **Mwapi**. The houses around are substantially built. The walls are made of a peculiar kind of grass closely bound together with strips of bamboo. The roofs are of *makuti*, coco-nut thatch. The whole district, situated about 1,800 ft. above sea-level, appears to be healthy. The air was remarkably fresh in July. Authorities concur in pointing out the specially favourable character of this district for European settlement, though one of them mentions its bad reputation for malaria. The land is everywhere well cultivated. Soil sandy and fertile. Route 30 is joined here, at m. 154. Telegraph station.

(B) *Via* CHIHORA-VENI, 273 miles

This route provides an alternative between Kipiranganga (Kaluma) and Mwalia, and runs all the way almost parallel to Route A, some 15 to 20 miles to the E. of it. The nature of the country traversed is apparently the same in both cases. Distances up to mile 114 are as given by Maples; beyond that point they are measured on the maps.

miles

- 0     **Masasi.**  
(For details up to m. 114 see Route 14 A, m. 140 to m. 254.)
- 114     Near S. slope of **Mtende** hills route turns off in a southerly direction, away from the W. ridge of the Mavia plateau.
- 119     Neighbouring country swampy in rains. Route bends SSW.

miles

- 124 **Falume**, a Makonde village. Beyond the village route bends SSE.
- 139 **Nkongo**. Water. Route bends again SSW. and follows the upper course of the **Mhiru**, a tributary of the Msalu.
- 142 Route crosses the Mhiru, the latter flowing SE.
- 143 Route crosses another branch of the Mhiru.
- 144 Route bends SSE.
- 149 **Njirare**, a Makwa village.
- 156 **Nasombi**, a Yao village. Route bends SSW. A path goes off in easterly direction, crosses Route 17 at Majani, m. 32½, turns S. through Ngumbi and Pombelli-Wandu, and rejoins main route at m. 187.
- 157 Route crosses the **Mwiriti**, a river flowing E. into the Msalu.
- 180 A path to the Mavia plateau goes off NE. (see Route 17).
- 187 **Ntote**, Matambwi and Makwa villages.
- 198 **Chihora-Veni**, a large village on N. bank of **Msalu** river, and to the W. of **Koronji** hill. The Portuguese post of **Coronje** appears to be in this neighbourhood.
- 199 Route crosses the Msalu. Direction S. Path winds considerably.
- 234 Isolated hills on both sides.
- 245 Route crosses the **Mtepwezi** river, flowing ENE. Near r. bank of river is **Montepuezi**, Portuguese post and telegraph station. Here route joins Route 30 (at m. 126), and follows it to
- 273 **Mwalia**.

## ROUTE 19

### THE LOWER LUJENDA RIVER

#### NGOMANO (ROVUMA JUNCTION)—MTARIKA, 187 miles

The authorities for the Lujenda river-route are for the most part partial, and details are scanty. The only traveller whose brief narrative and map cover the whole route is J. T. Last (November–December 1885). Some account of the river at Ngomano is given by Livingstone (May–June 1866), Smythies (May–June 1887), and German travellers up the Rovuma (see Routes 1, 2). J. Thomson covers the first 67 miles of the route (August 1881), and G. Angelvy (July 1884) a shorter distance. The first 25 m. are covered by the report of a prospector in 1906, whose account and map provide little material for the present purpose. Between m. 106 and m. 187 the map and report of another prospector in 1900 supply some evidence, which, as will be seen, is at variance with that of Last. Mtarika itself is fairly well known. Maps accompanying the accounts of these various authorities have been used, and also that of Vilhena (1904), a former governor of the territory, which for the most part coincides with Last's.

The route runs along or near the r. bank of the Lujenda, but indications are given concerning the l. bank where possible. It may be added that Last speaks of crossing and recrossing the river by fords or canoes, but his map does not give evidence of this in the route under notice. The distances are merely estimates from various maps (taking into consideration the time occupied by travellers), and must be used with caution. Last made eight days' marching over the whole route.

It is remarked by the authority of 1900 that the natives from Mtarika northward traded habitually with Mikindani on the (then) German coast, and few of them knew of Ibo on the Portuguese coast. On the other hand, an authority of 1905 (Vilhena) mentions a regular caravan route along the Lujenda from Mtarika to Ngomano, and thence E. along or near the Rovuma to Palma on Tunghi Bay in the north of the Portuguese territory. This authority gives 40–45 days as the caravan time from Mtarika to the coast by this route, and remarks upon the large size of the caravans, from which he deduces a route free of serious difficulty, and well supplied



with water. He describes the Lujenda valley up to Mtarika as fertile and populous.

miles

0      **Ngomano** (the name is said to signify 'confluence'), at the junction of the Lujenda with the Rovuma. Portuguese post and telegraph station E. of the confluence (r. bank of the rivers). Alt. 730 ft.

On the position of Ngomano, see note in introduction to Route 1.

The two rivers at the confluence differ little in size and character. The Lujenda bed is about 1 m. wide; the stream is from 150 to 200 yds. wide early in the dry season (May), and small canoes are used upon it with much skill by the natives, both men and women (Livingstone). Rocky bottom, strong current, islands and shoals in stream.

In general the river as far up as Makaanja is described as winding with a general direction up stream nearly due S. between wide tree-covered banks and amid great stretches of sand (August).

Just above the confluence the **Mbunga** stream enters from E.

2      **Nambunda** river enters from E.

6      **Makuula**, village shown in 1906 (not in earlier authorities).

15      **Mchenga**, village shown in 1906 (not in earlier authorities).

18      **Chikumla** river, from E., is crossed.

21      **Nanjezi** river, from E., is crossed. A little below and opposite this the larger **Chiulezi** river joins from W.

25      **Namahi** river, from E., is crossed. About opposite this (l. bank of Lujenda), authority of 1906 indicates large village of **Mkochera**, to which he crossed the Lujenda a little below this point.

30      **Ilangwe** river, from E., is crossed.

32      **Litule** or **Ituli**. The coalfield of the lower Lujenda is commonly known by this name. The existence of

miles

coal of any value was disputed by Thomson, but is reported to have been definitely established; it appears that some use has been made of it by Arab traders.

38 **Luwindo.**

49 **Mlalika** river, from E., is crossed.

51 **Makanja.** Here, at the point of contact between the soft shales of the lower Lujenda and the harder gneiss which is now encountered, a fine cataract has been formed owing to the more rapid wearing away of the softer rock. The river here forms a number of channels, and above this point its character changes. Its course (looking upward) bends SW., and later nearly W., sandbanks are less common, and long still reaches are met with, separated by rocks and cataracts, while the breadth of the river-bed is contracted.

57 **Kipuputa** island off the mouth of a r.-bank tributary.

67 Alt. 835 ft. About here the river makes the westerly bend referred to above. The **Lambezi** river enters from E. There are (or were) several villages in the locality, of which **Kumtawila** is near the junction of the Lambezi. On the opposite bank, a little above, is (or was) the village of **Nantusi** or Kwanantusa, to which Thomson crossed the Lujenda in August about 1 m. below the Lambezi junction. Here also, near the l. bank of the Lujenda, may be the Portuguese post of **Nanguar**, but according to another map it is placed higher up the river (m. 94 below).

To the S. rises **Ngando** hill; to the W., on the other side of the river, and close to it, is **Lipumbula** hill (1,805 ft.), an isolated and precipitous granite mass, difficult of ascent.

73 **Ekilunga.** Lipumbula hill is about opposite this point.

74 **Kitanda** river, from SE., is crossed.

75 **Mkulia.**

miles

- 83 **Makungwa.**
- 86 **Lusipi** river, from S., is crossed.
- 88 **Nanapurura.**
- 94 **Nyangwati.** One map places the Portuguese post of **Nanguar** here on the opposite bank of the Lujenda. Whether some confusion with the village name is involved, or whether the post was moved (as sometimes occurs) cannot be ascertained.
- 100 **Mapiruni**, or Ngoronji hill.
- 106 **Mkopo**, a considerable river from SSE., is crossed. The authority of 1900 passed southward to Kisanga Head on the route between Mtarika and the coast (Route 30), making the distance 56 m. (3 days' march), but he was in forest, and on no path.
- 116 **Rariko**, Lureko, or Loleko, a considerable river from S., is crossed. Its sands are reported to yield gold. It should afford a route southward to join the route from Mtarika to the coast (Route 30), and its valley has been traversed by more than one prospector, but no special comment is made upon the travelling. **Paukutula** village at its crossing (1900). River bank-high in January of that year.
- 120 **Ndarima.**
- 122 **Msusa** (by map of 1900 this village is the next after the Rariko, and closer to it).
- 132 **Karambo** and **Kinongola** in this neighbourhood (?). Alt. 1,150 ft. (doubtful). Hereabouts the river bends gradually SW.
- 143 **Kandulu.** Alt. 1,330 ft. (doubtful). From this point Last's map and others are at variance with the authority of 1900, whose distances are much longer, and his altitudes higher (but it is clear that these are taken, mostly, somewhat above the river-level). His distances, again, are longer in his narrative than according to his map, as he made détours, prospecting. His map distances are followed here. The names of

miles

tributary rivers, again, as given by him, differ, with one exception, from those given by Last, and are omitted here, as they are streams of little importance, though the frequent crossings cause delay in the wet season (January, &c.).

The important Yao chief Kandulu migrated, with Mtarika (below), in 1909, and was found on the Rovuma, not far below the point known as Undi's, in 1910.

About NW. of Kandulu, some 6 m. from the l. bank of the Lujenda, on its tributary the **Mtapili**, the Portuguese had formerly a post called **Kandur**.

149 **Kidabamba.**

154 **Lumbize** river, from SE., is crossed.

159 **Abdallah's** (Abdallah Lulangu). Alt. 1,480 ft. (doubtful).

About W. of this point, and 5 m. from the l. bank of the river, is the Portuguese post (1916) of **Luatizi**, on the **Luatizi** river, which joins the Lujenda a few miles above Abdallah's.

179 **Umiraza.** Alt. 1,575 ft. (doubtful). Difficult going (in January), bushy country and flooded rivers.

187 **Mtarika.** Alt. 1,476 ft. (railway survey).

Last's distances, followed in Vilhena's map, are approximately 10 m. (against 16 above) from Kandulu to Abdallah's, which he places quite close to the Lumbize river, and 17 m. (against 28), from Abdallah's to Mtarika. The authority of 1900 actually marched a distance of 101 m. between Mtarika and the Mkopo river, in 6 days.

Mtarika is an important point on the Lujenda. Here the regular native trade route from the coast (Pemba Bay and Ibo) strikes the river, and there is said to be something in the nature of a regular ferry, with a considerable number of small dug-outs. On the opposite (l.) side of the river is the Portuguese post of

miles

**Mtarika**, the seat of administration for the *concelho* of the same name; formerly a garrisoned fort, Dom Luis Felipe, the place of which has been taken by Fort Valadim (see Route 34). Telegraph line from Port Amelia reported in 1917.

## ROUTE 20

UNDI (ON THE ROVUMA)—NANTUSI (ON THE LUJENDA),  
80 miles

*Authority* :—Joseph Thomson (August-September 1881).

**Undi** (see Routes 2, 3, at end). From here route runs generally SE. The country is undulating, rugged, and broken here and there by low ranges of hills. About midway in the route it passes E. of the **Mkula** or Ukulu hills, from which Kumpelembe, who was reported to occupy the site of Undi in 1910, had removed. Towards the Lujenda the hills merge gradually into a plain. The land as seen by Thomson was mostly stony, barren, and uninhabited, and covered with thin forest.

The total distance to **Nantusi** (Route 19, m. 67) appears to be about 80 m. : it was covered by Thomson, who was travelling in the reverse direction, in 'four hard marches'.

## ROUTES 21

THE ROVUMA (ABOVE UNDI)—MWEMBE AND MTARIKA  
(A)

*Authorities* :—Livingstone, July 1866; Steere, November 1875.

Livingstone left the **Rovuma** valley at **Mtarika** new town (which was a short distance W. of the old town : see Route 4, note at end) on July 5 and travelled to **Mtende**, who was the last chief to be visited before Mataka of Mwembe. The

intervening country, for 8 days' march, was entirely uninhabited. The forest consisted of 5-ft. bush and small trees: to the south the *Masuku* tree predominated (compare Route 23, m. 15). The country bore signs of having formerly supported a very large population and water was plentiful even in the dry season. Livingstone crossed a succession of ridges and valleys, and in a day's march of 6 hrs. he counted 15 running streams from 1 to 10 yds. wide.

Bishop Steere, travelling a little E. of Livingstone's route, describes the same type of country. He remarks on the difference of the forest from that of the Mwera country to NE. across the Rovuma, the trees being smaller.

From Mtende Livingstone reached Mt. **Linata** (? Limata) in 2 days' march. Thence one day along the water-parting of the Lujenda and Lisnyanda (? Usanyando) to near Mt. **Leziro** (? Wizulu). Three days later he crossed the **Luatizi** (see Route 19, m. 159), a rapid stream 40 yds. wide and waist deep. The country here was more undulating. The next day brought him to the edge of the cultivated ground, and after a short march on the following day he reached **Mwembe**.

Bishop Steere left Mwembe on his return journey on December 22, and reached the Rovuma after a short day's march on January 1. At this season travelling was made difficult by the rains. The rivers, especially the **Luatizi** and the **Lukwisi**, which is a little farther N., were hard to cross. The open glades in the forest had become unfathomable masses of soft mud, and the lowlands of the Rovuma were flooded by the river, which was then said to be exceptionally high.

Mataka's town, **Mwembe**, was situated in an elevated valley 2,700 ft. above sea-level, which was surrounded by fantastic craggy hills. The country to the W. rose to 3,400 ft. The population was very large. Cultivation and irrigation were highly developed, and corn and cattle were plentiful. Mwembe was surrounded by numerous large villages.

Water was plentiful, and there were in Livingstone's time many trees, but nine years later, when Steere visited the place,

the valley was absolutely bare and the hills very largely cleared.

Although it was the dry season when Livingstone was here, the air was moist and the sky so overcast every day after 10 a.m. that Livingstone could take no observations.

(B)

*Authority* :—Companhia do Nyassa : Reports on Occupation of Mataka Region, 1912, &c.

The above routes of Livingstone and Steere must have passed across or near to the hills named **Wizulu** or **Oizulu**, which are marked on maps about 12° 15–20' S., between the Lujenda valley to E. and the basin of the Usanyando to W. On the S. side of these hills the Portuguese established the post of **Oizulu** in 1911, and it was ordered to be abandoned in August 1916. There are references to a line or lines of communication from the Rovuma to this point, but no particulars are furnished.

The column operating against Mataka in 1912, which consisted of 18 Europeans, with some 300 trained soldiers and 3,000 armed natives, marched from Oizulu to Mwembe in October in 4 days. There was some fighting *en route*, but the actual marching time seems to have been about 25–26 hrs. Between 6 and 7 hrs.' marching on the first day, from Oizulu to outlying Mchemba settlements of the chief Sarrange, lay along 'almost impassable' tracks, with very steep ascents and descents. After the hills were left, proceeding SW. (?), an abundantly watered country, very largely under cultivation, was traversed to Mwembe. On the second day the chief settlement of Sarrange was reached after 5 hrs. 50 mins.' march. On the third day the route improved, though dense bush in parts still made it necessary to guard against surprise. About 5 hrs.' march terminated at the settlement of **Makokola**. On the fourth day about 8 hrs.' march led across the **Luatizi**, through the then deserted settlement of **Nakavala**, to **Mwembe**.

## (C)

The column against Mataka, mentioned above, marched from Mtarika to Oizulu post. Reversing the description given, the route appears as follows.

From **Oizulu** post,  $3\frac{1}{2}$  hrs.' march over difficult paths to the **Msawezi** river, a tributary of the Luatizi, in a thickly-wooded valley. Marching thereafter was easier, along or near the Msawezi, by which the column bivouacked on three successive days, and which always afforded sufficient water (Sept.-Oct.). The route then lay by the post of **Luatizi** to **Mtarika**. The total marching time from Oizulu to Luatizi was about 19 hrs. (4 days); the time from Luatizi to Mtarika is not stated.

## (D)

*Authority* : Portuguese reports about 1903-5.

Between **Maziwa**, on the r. bank of the Rovuma, and the Luchulingo (see Route 4, m. 50, and introduction to Route 24) there appear to be several tracks. Of these, one is specially referred to as connecting Maziwa with **Makolo**, which lies above the valley of the **Usanjezi**, a r.-bank tributary of the **Luchulingo** with a course from S. to N.

Mt. Makolo, one of the highest points of the Ajawa hills, was described in 1905 as occupied by a chief who made it a point of observation dominating the route from Mtengula by Chisindo and Likondolo to Maziwa. The Portuguese established a post of Makolo in 1910 (unoccupied in December 1916). It was estimated at 2-3 days' march from Maziwa.

From Makolo to **Fort Valadim** is 3 days' march S. by E. There was an intervening post at **Quitanda**, but it was abolished in August 1916.

Fort Valadim was established in 1912 at Mataka's town of **Mwembe** after the suppression of that chief. It is not clear that this town of Mwembe is on the same site as that described by Livingstone, but it is stated in a report of the expedition



which occupied the territory in 1912 to have been a place of 800 huts, situated in very fertile country, well irrigated, and yielding tobacco, cotton, and maize. Mwembe was raided and burned by the Portuguese in 1912.

## ROUTE 22

### MPANDA (R. BANK OF ROVUMA)—LUCHULINGO RIVER

*Authorities* :—Rev. C. A. Janson and Rev. W. P. Johnson, 1882 (Central African Mission, *Occasional Papers*, xix, and *Proc. R.G.S.*, vol. vi, 1884).

The missionaries named above, in the course of a journey from Masasi to Lake Nyasa, in December 1881–February 1882, struck SW. from the Rovuma near a point then called Mpanda (Mponda's of German map 1:300,000, see Route 4, m. 18). The travellers were following in the tracks of a large caravan bound for Unangu, and found that its camps and 'bowers' were usually left.

The distance as estimated by Janson, and allowing for a short stage of which the length is not stated, is about 70 m. to the Luchulingo: from the maps this would appear to indicate either an overestimate or a very indirect route.

(The whole route from Mpanda to Unangu, allowing for two stages for which the mileage is not stated, would make about 140 m. and it was marched in 10 days.)

1st day.—From **Mpanda**, route lay for about 1 hr. close to the river (S. side), where it is broad, deep, and quiet.

Route then struck SW., away from the Rovuma, through an undulating wooded country, generally keeping on high ground, and occasionally passing old clearings of deserted villages. Isolated wooded hills, between which streams flow in wet seasons. In some of these, pools were found (January 22), or water was obtained by digging a little. Distance covered, about 19 m.

2nd day.—Undulating track; water not infrequent. This was a short stage; distance not stated.

3rd day.—Path approaches and enters more hilly country, with fine isolated rocky hills, well wooded, and reaches the **Usanyando** river, with steep muddy banks. This considerable stream was waded across a belt of rocks. Distance covered, about 20 m.

4th day.—Path at first level. Some palms. Then ascent between two hills, rocky and with short undulations. Plenty of water. Distance covered, 18 m.

5th day.—During this stage (in the afternoon) the river **Luchulingo** was forded. (See Route 23, m. 15.) The travellers camped a little beyond it : distance covered, 13 m.

## ROUTE 23

### THE LUCHULINGO VALLEY

#### FROM THE ROVUMA TO UNANGU, 88 miles

*Authorities* :—Rev. C. A. Janson and Rev. W. P. Johnson, 1882 (Central African Mission, *Occasional Papers*, xix, and *Proc. R.G.S.*, vol. vi, 1884 : see introduction to Route 22) ; J. G. Galhardo in *Bol. da Companhia do Nyassa*, 69 (1903) ; Vilhena, 1905.

The Luchulingo valley extends from the upper Rovuma in a general SSW. direction to and beyond Unangu. The topography at its confluence with the Rovuma is by no means certain, as the Portuguese authorities give little clue to its relation with the known features on the N. side of the Rovuma. According to the German map 1 : 300,000 the Maziwa river (Route 4 under m. 50) joins the Rovuma on the r. bank some 10 m. below the confluence of the Sasawara on the l. bank, and the Luchulingo joins the Rovuma on the r. bank some 9 m. above the Sasawara. The Rovuma is shown as making a northward bend, and the direct distance between the Luchulingo and Maziwa mouths is given as 14 m. Portuguese maps put these two points only some 4 m. apart, and Galhardo's report refers to the Luchulingo widening towards

its mouth at 2 hrs.' march from Maziwa village (at the Maziwa mouth).

From the mouth to Unangu accounts agree approximately in showing a distance along the valley of about 80-90 m. : Galhardo gives 120 kilometres in a direct line. The valley is bounded on the E. by the Ajawa (Yao) hills and on the W. by those of Msenga, which, towards the mouth, approach each other closely, making the valley narrower than above. Along the lower (first) half of the present route, if not above, it appears to have been practically uninhabited at the periods covered by the authorities cited, and to be liable to floods in the wet season. From the Msenga hills on the W. there are many tributaries, rapid streams difficult to cross in the wet season, but their ravines are believed to be dry in the dry season. The east side of the valley, at least in the lower part, seems generally to slope more directly upward from the river, and to be less marshy and cut by fewer ravines.

Galhardo was marching on a punitive expedition with another European, 10 native soldiers, 10 *cipaes*, and 48 bearers. At least as far as Likondolo, therefore (i. e. in the upper part of the valley), he was concerned to avoid rather than to follow regular paths, and his narrative furnishes no evidence as to his exact route. The Ajawa hills were ascended above Likondolo, and the passage along their crest appeared to present no difficulty. The Luchulingo is difficult to cross (at least in the rainy season) without adequate provision for bridging, and supplies are very scanty.

miles

0

Confluence of the **Luchulingo** and **Rovuma**. The Luchulingo is described by the authority of 1903 as widening at its mouth into a kind of bay, on which the natives use dug-outs and other craft. Hippopotami abound. The passage across the Rovuma is said to be easy, and Galhardo regards this point as important, as he was informed that there was no other crossing in the neighbourhood during the rainy season, the banks of the Rovuma descending steeply.

miles

Former Portuguese post (called Macaloge) established 1911.

The country above the mouth was found in 1903 to abound in game.

- 15 ? Janson and Johnson appear to have crossed the Luchulingo in this neighbourhood, coming from the E. (Route 22). They found it (January) waist high in parts; current not particularly strong, bottom level and free from rocks. Abundant traces of elephants. *Masuku* trees, with round reddish sweet fruit, about the size of a small lime, were found.

These authorities did not follow the Luchulingo closely, but proceeded generally westward from it for some 10 m. (?) before turning SSW., and marching parallel with the river. Route ascends and descends steeply, and there is one specially steep ascent up the **Ichumundu** hills (part of the Msenga system).

After a march of 18 m. beyond their camp, W. of the Luchulingo, the route descended gradually to a lower level over open grassy country.

- 42 Crossing of the **Lulimbo**, one of the many western tributaries of the Luchulingo.

- 57 Crossing of the **Lukisi** or Lulisi. **Likondolo** village near its confluence with the Luchulingo (1903). Galhardo marched down-stream from here to the mouth of the Luchulingo in about two days: the distance may be overestimated.

- 67 About here the **Mlola** river is mentioned by Janson as a very rapid river, which was waded on a line of submerged rocks above rapids. If the authority is correct in his naming of this stream, it appears not to be that marked as Mlola on Johnson's and subsequent maps, but to be more probably an unnamed river which is marked S. of the Lukisi.

Shortly beyond this the hill of Unangu is sighted as an isolated double peak. Many streams are forded

miles

(January), some with marshy banks. After much rain the reddish clay soil makes heavy going.

It appears to be in this locality that Galhardo found great difficulty in crossing the Luchulingo (February); a ford was unsuccessfully sought for several miles along the river. A native bridge was seen, though not used. It was attempted to use a raft, which was swamped in the rapid current.

88 The **Lukulesi** river is crossed, and **Unangu** is reached. Mission station. Portuguese post (December 1916). Five days' march by Janson and Johnson from a point near their crossing of the Luchulingo.

## ROUTE 24

### THE LUCHULINGO MOUTH—MTENGULA (LAKE NYASA)

*Authority* :—Portuguese reports.

A route was followed by Galhardo (see Route 23) in 1903 from Maziwa and the lower **Luchulingo**, passing over the **Ichumundu** hills (Route 23, m. 15) and along the valley of the **Msinje** to **Chisindo** (Route 27) and over the hills between this valley and Lake Nyasa to **Mtengula** on the lake. No particulars are given, but the march was accomplished, in haste, in 6 days. Another authority (1905) gives 10 days for the march, which is stated to be very difficult, while population is scanty and supplies are scarce.

## ROUTE 25

## MITOMONI (UPPER ROVUMA)—KOBWE (LAKE NYASA)

*Authorities* :—Universities' Mission to Central Africa (*Likoma Diocesan Quarterly*), 1907 ; W. B. Suter, 1910 ; Stierling, December 1900 ; verbal information.

This is stated by one authority to be the best route from the upper Rovuma to Lake Nyasa, but the accounts of it are confused.

**Mitomoni** is situated at the junction of the **Msinje** with the **Rovuma**. (See Route 5, m. 131.)

The Rovuma, described in the wet season as a big turbid stream, is crossed by canoes. Stierling, in December, crossed it about  $1\frac{1}{2}$  m. above the junction of the Msinje.

The path to Kobwe appears to follow the frontier for a short distance, and then strikes generally SW. It is believed that the Portuguese cleared a track along this route to communicate with their former post at Mitomoni. The route, crossing the plateau before ascending the hills between it and Lake Nyasa, passes over monotonous plains, without villages in 1910. Thereafter it ascends and crosses the hills, which rise to more than 5,000 ft. above sea-level in this part, and descends to Lake Nyasa, apparently some distance N. of **Ngofi**, joining the track referred to in Route 26, and following it along the lake S. to **Kobwe**.

The total distance from Mitomoni is estimated by one authority at 66 m. to the lake and 85 m. to Kobwe, but these figures are mere approximations.

## ROUTE 26

## LAKE NYASA

THE PORTUGUESE SHORE, FROM NORTH TO SOUTH,  
164 miles

*Authorities* :—Admiralty Charts of Lake Nyasa, 3,134, 3,135 (1897–1902); Vilhena's map, 1904; verbal and other information from Universities' Mission to Central Africa.

There are a number of villages at intervals along the Portuguese shore of Lake Nyasa, and it is probable that a track connects them throughout, save that there is some uncertainty as to the first 27 m. or so S. from the German frontier. For this there is no evidence save a statement that the lake-shore is rough and difficult, and that natives generally coast this stretch in canoes.

The hills fall steeply to the lake, or to the narrow plains which fringe it intermittently, throughout. The altitude of the lake is 1,565 ft. above sea-level. The coast-line is cut by small streams, seldom more than 10 m. long. In some places there are stretches of sandy beach; in others the lake is fringed with dense beds of prickly reeds. On the foothills the surface is often loose and stony.

The track requires to be kept clear of vegetation, &c. from year to year. As far south as Mtengula it is said that the Portuguese have effected some improvements in recent years, and from Kobwe to Msumba (m. 46–91) a bicycle has been used, and effected some saving over marching time.

According to a description written in 1904, the natives have villages not only along the lake-shore, but also on the plateau (called Manda) behind, generally about 1,000–1,500 ft. above the lake, and 8–10 m. inland. Many people who dwell on the lake-shore have also gardens in the Manda district.

The lake-side villages are malarious, being generally close

to places which breed the *anopheles* mosquito, e. g. rice-fields, or the mouths of streams.

A number of the lake-side villages have mission schools or are visiting-points of the Universities' Mission to Central Africa, whose centre is Likoma Island (m. 41).

miles

- |    |  |
|----|--|
| 0  | <b>Kivindi</b> stream, where German-Portuguese frontier reaches the lake.  |
| 1  | <b>Mpoto.</b>  |
| 6  | <b>Likesi</b> (?). Beyond this there are streams at or about m. 7 and 10.  |
| 16 | <b>Chivinde</b> , former Portuguese post. Beyond this there are streams at or about m. 17 and 18.  |
| 27 | <b>Lumbaulo</b> , or Luambulo.<br>Hereabouts route from Mitomoni strikes the lake-shore (Route 25).  |
| 33 | <b>Mtumba.</b>   |
| 36 | <b>Ngofi</b> , village on sandy shore, with extensive marsh and rice-fields behind, backed by very high hills to E.  |
| 37 | <b>Melimbe</b> and stream.   |
| 39 | <b>Ndofi.</b>  |
| 40 | <b>Mtawa.</b>  |
| 41 | <b>Chitezi.</b> Coast turns SW. 9 m. W. from this point, and 4 m. NW. from Kwango (m. 49 below) is <b>Likoma</b> Island, local head-quarters of the Universities' Mission to Central Africa, with a cathedral. The island lies roughly equidistant from the northern and southern extremities of the lake, and is about $4\frac{1}{2}$ m. in length and $2\frac{1}{2}$ m. broad, with an extreme elevation of 540 ft. above the lake level. The island is a mass of granite, with sandy barren soil. Cassava grows, though slowly, together with some of the smaller millets. There are no large trees except baobabs. Firewood, timber, grass, and much of the food used are imported from the mainland. Fish are plentiful in the lake. The water of the lake is drunk: there are only intermittent streams during the wet season. The |



miles

harbour (Mbamba), on the E. side at the mission station, is one of the best on the lake, well protected, with extensive anchorage, and easy to make at night or in heavy weather. Native population estimated (1904) at 2,000, in villages along the shore.

46 **Kobwe**, and stream, up which Route 27 leads towards Unangu. There is a Portuguese post of Coboe, situated a little farther on, near

49 **Kwango**, or Kango. Guavas, lemons, Cape gooseberries, &c., are grown in the mission gardens in this neighbourhood.

52 College of the Universities' Mission to Central Africa.

56 **Chitokota** (Achetaia, Malo).

58 Two m. to the W. the triple headland of Point Malo projects NW. into the lake.

62 **Mbeweka**.

65 **Tumbi Point**.

67 **Limbwi**.

72 **Makungwa**.

74 **Pangwa**.

75 **Ngoo**. From here coast trends WNW. to Point Rye.

77 **Mtuku**.

78 **Chisanga**. Sandy shore, with marsh and rice-fields behind.

84 **Pachia**. Brick mission church. Marshes and rice-fields.

86 **Mchigi**.

88 **Mbampa**.

91 **Msumba**, mission centre. Stone church. Marshes and rice-fields in vicinity. Route to Unangu (see Route 28).

94 **Chiwanga**.

99 **Mtengula**, chief Portuguese post on Lake Nyasa, and centre of the Lago (lake) *concelho*. Situated at the head of a small bay (Luchilunji harbour), 1 m. wide, opening SSW. Route to Unangu (see Route 28).

miles

- 101 **Chamanji** stream. Marshy ground here near shore.
  - 102 **Vamu.**
  - 104 **Malebwe** stream.
  - 107 **Chingomangi** (Chikole).
  - 114 **Mluluka.** The stream of the same name has been found unfordable during rains in April. Small bay with marshy shores. Route to Unangu (see Route 29).
  - 115 **Mlama.**
  - 117 **Losefa**, or Losewa, settlement between two streams. Marshes and rice-fields. This was the terminus of the old route from Mwembe and the interior via Unangu (compare Route 29).
  - 123 **North Point** at mouth of a stream (lat. 13° S.).
  - 128 **Madimba.**
  - 130 Stream.
  - 132 **Mpanji** Cove and South Point to S. **Mpanji** hills to E., 3,000 ft. above lake-level.
  - 136 Stream.
  - 137 **Chilowelo.** On N. side of the bay on which this village is situated, the hills descend sharply close to the shore, with cliffs.
  - 146 **Dwafisi** stream.
  - 146 Cape **Barbari** or Malambe, low and sandy, with trees. Hills immediately above, 400 ft. above lake-level. Inland to ENE. in the hills is the village of **Luangwa.**
  - 155 **Port Arroyo** (Porto Araujo), former Portuguese station, situated on the rocky **Zirambo** Bay.
  - 156 **Luangwa** stream.
  - 159 **Mitendula** island.
  - 164 **Lipuchi**, Portuguese post and frontier station : proposed terminus of railway, and end of route from the Lujenda river and Mwembe, via the Luambala valley and Mtonya. (See Route 37.)
- Beacon No. 17 of the Anglo-Portuguese frontier on the lake. The track continues across the frontier,

miles

following the lake shore, through British territory (Nyasaland Protectorate), and in about 20 m. reaches Lulunga, from which a road fit for wheeled traffic continues S. along the lake.

## ROUTE 27

### KOBWE (LAKE NYASA)—UNANGU, 85 miles

*Authorities* :—Universities' Mission to Central Africa (*Likoma Diocesan Quarterly*), 1906 ; Maples, September 1894 ; verbal information.

This is an easy route, though longer than any other. On the missionaries' journeys at least three nights' camping *en route* were necessary. In 1906 the route beyond Chitagala was closed for fear of the hostility of Malinganile, who, however, was subsequently suppressed by the Portuguese. After the ascent from the lake to Manda district about 40 m. of rolling forest country follows, with rather long waterless stretches in the dry season. Watering-places are indicated below.

NOTE.—It was reported that the Portuguese in 1916 had begun to make a road from Kobwe to Unangu.

Hours		
Total	Inter- mediate	
0	0	<b>Kobwe</b> (Lake Nyasa, alt. about 1,570 ft. See Route 26, m. 46). Route leads over plain of Kobwe river for about 1 hr. ; ascend the hills sharply to the Manda district in about 1 hr.
1	1	Ascend hills sharply to <b>Manda</b> district.
2	1	Summit of ascent. Wide sweep of level, park-like country.
4	2	Large pond (one of several in the locality).
2½	6½	<b>Kobwe</b> river. A little farther on (¼ hr.) is

Hours		
Total	Inter mediate	
		a big curve of the river, which is a common camping ground for the first night.
		Route continues through uninhabited forest to near Chisindo.
9 $\frac{1}{4}$	3	Stream in marsh.
12 $\frac{1}{2}$	3 $\frac{1}{4}$	<b>Chisindo</b> , in valley of <b>Msinje</b> river. Former Portuguese post ( <b>Quissanda</b> ) by the river in this vicinity. One day's stage from Kobwe river.
		Route to Chitagala is 'stiff walking, up and down hill all the way and rough and stony'. The following watering-places are indicated on this stage (hrs. from Chisindo) : stream (2 hrs.), river (3 hrs.), river (4 $\frac{1}{4}$ hrs.), stream (5 $\frac{1}{4}$ hrs.), stream (6 $\frac{1}{4}$ hrs.), stream (6 $\frac{3}{4}$ hrs.).
19 $\frac{3}{4}$	7 $\frac{1}{4}$	Good river. <b>Chitagala</b> in this locality.
		Route to Unangu is easy going. The following watering-places are indicated (hrs. from 'good river' above) : stream (1 $\frac{1}{2}$ hr.), small stream (2 $\frac{1}{4}$ hrs.), good river (3 $\frac{1}{4}$ hrs.), good river (4 hrs.).
25 $\frac{1}{2}$	5 $\frac{3}{4}$	<b>Lukulesi</b> river.
26	$\frac{1}{2}$	<b>Unangu</b> (Uyango).

## ROUTE 28

## MTENGULA (LAKE NYASA)—UNANGU

Via CHIWEGULU, 66 miles : WITH ROUTE FROM MSUMBA,  
76 miles

*Authority* :—Universities' Mission to Central Africa (*Likoma Diocesan Quarterly*), 1906 ; A. H. Crabb (the same, July 1904 : journey of May) ; Maples, 1894 ; verbal information.

On this route there is some steep and rough walking, and the path is not practicable throughout for a *machila* (carrying hammock). Plentiful water-supply all the way. Path nearly all through forest country. General direction SE. to S.

NOTE.—A road said to have been fit for motors was made by the Portuguese from Mtengula for about 10 m. inland towards Unangu, but it is not known to have been carried forward.

Hours		
Total	Inter- mediate	
0	0	<b>Mtengula</b> (Lake Nyasa, alt. about 1,570 ft.). See Route 26, m. 99. Route runs for about 3 m. through millet and maize fields. The <b>Mchinje</b> river is twice forded.
1	1	River above Mtengula. Steep ascent for about 3 hrs.
2	1	River in bamboo grove.
4	2	Stream.
6½	2½	Small muddy stream.
8	1½	<b>Msinje</b> river, a rapid stream in a rocky bed. Mention is made of a track N. and S. along this valley, which is crossed. It presumably joins Route 24.
9¼	1¼	<b>Chiwegulu</b> . This place was deserted in 1914, for fear of raids by Malinganile's people, but after his suppression by the Portuguese, the natives were beginning to return in 1916 Here the path from <b>Msumba</b> joins on l.

Hours		
Total	Inter- mediate	
		Msumba is on Lake Nyasa about 8 m. NNW. of Mtengula (see Route 26, m. 91). As a route from the lake to Unangu, compared with that from Mtengula, the path from Msumba 'is about 10 m. longer, and has nothing special to recommend it'.
		'After leaving Chiwegulu (Mt. <b>Njila</b> ), a high ridge over 4,000 ft. above the lake is crossed, and from here a magnificent view may be obtained.'
13	3½	Stream near waterfall.
16	3	<b>Malulu</b> . Stream.
17½	1½	<b>Mlendwesi</b> river. Route 29, from Mluluka, joins on r. The path hereafter is rough and hilly. The forest is quitted, and marshy ground may be encountered in this neighbourhood.
19½	2	Good river.
21	1½	<b>Lukulesi</b> river.
21¾	¾	<b>Unangu</b> .

## ROUTE 29

MLULUKA (LAKE NYASA)—UNANGU, 62 miles

*Authority* :—Universities' Mission to Central Africa (*Likoma Diocesan Quarterly*), 1906.

This is much the easiest route from the lake to Unangu. General direction E.

Hours		
Total	Inter- mediate	
0	0	<b>Mluluka</b> (Lake Nyasa, alt. about 1,570 ft.). See Route 26, m. 114. Road rises from the lake, gradually at first, then more steeply

Hours.		
Total	Inter-mediate	
		over a ridge 3,000 ft. above the lake, before descending to Chizulu.
3½	3½	River in bamboo grove.
6½	3	<b>Chizulu.</b> River. From here to Unangu is easy walking except for a long ascent over the ridge above Mnjisi.
8	1½	Good river.
8¼	¼	Good river.
8½	¼	River and marsh.
9¾	1¼	Small stream.
10¼	½	<b>Msinje</b> river.
11½	1¼	Good river.
12	½	Stream.
13	1	Mountain stream above Mnjisi.
13¼	¼	<b>Mnjisi.</b> River.
14¾	1½	Small river.
16	1¼	<b>Mlendwesi</b> river. Join Route 28 (from Mtengula, on l.) and follow it to
20¼	4¼	<b>Unangu.</b>

## ROUTE 30

### PORT AMELIA—MTARIKA (LUJENDA RIVER), 323 miles

*Authorities* :—Survey for railway from Port Amelia to Lake Nyasa, 1912; *Boletim da Companhia do Nyassa*, passim; Gueit, journey of December 1899; Spilsbury in *Journ. African Soc.*, 1901-1 (journey of August-September 1900); Branco, October 1901 (quoted by Vilhena); Stevenson-Hamilton in *Geogr. Journal*, vol. xxxiv (journey of July-August 1908); MS. report of 1917.

This is the main route from Port Amelia to the interior, and there is reported (1917) to be a made track (*estrada*) throughout, in some parts 12 metres wide. There are bridges of local timber over some of the rivers: these and the

approaches to them are liable to damage or destruction during the rainy season, and need renewing annually.

The various authorities do not all follow exactly the same line throughout, but it is impossible to distinguish their alternatives in detail, and inasmuch as the main points named below are common to most of the accounts, whereas villages and posts have been altered or vacated from time to time, some of the place-names in the earlier authorities have been disregarded. In this connexion it may be observed that the report on the railway survey, referring in particular to the earlier part of the route, states that although the country has a large native population, 'in passing along the main trade route it might not be suspected, the natives preferring to have their kraals at some distance, say 3 to 5 m., from main paths or trade routes'.

The distances in miles must be regarded as approximations : wherever possible they accord with the railway survey, which was chained throughout, and gives control-distances of 126 m: from Port Amelia to Medo (which has been adopted in the itinerary below as the approximate distance to Montepuezi) and of 323 to Mtarika. These distances are somewhat less than those which can be gathered from the other authorities, especially over the first part of the route, from the coast to Montepuezi, where the nature of the country would probably allow a railway to take a more direct line than that of native paths, but in the more broken country between Montepuezi and Mtarika the distances agree very fairly.

Around Pemba Bay water is brackish : at Port Amelia rain-water is collected in cisterns. As the bay is left, water becomes sweet. During the dry season it is obtained mostly from water-holes which are found along the main trade route at distances varying from 7 to 15 m. The water is of poor quality and mostly very dirty, as the holes are shallow and unprotected, and used by the natives for washing as well as drinking. The holes are never more than 7-8 ft., but it is believed that good water would be found almost anywhere



on the route within 20 ft. of the surface, and it is always obtainable by digging in the beds of the larger rivers, when they dry in the dry season. At the end of that season the railway survey party (in September–October) found running water only in the Msalu (see note under m. 209, below), the Rariko (m. 290) and the Lujenda.

There is no definite information as to supplies. Such general information as is available as to the nature of the country along successive sections of the route has been incorporated in the itinerary below.

It is stated in the railway survey report that there would not be much difficulty in obtaining sand and stone for masonry. Rock is plentiful. As a general rule good packing material could be obtained from side-ditches, and a better quality of ballast could be obtained from river-beds beyond m. 32.

A telegraph line runs from Port Amelia to Montepuezi (m. 126) and thence NW. to Nicoque (Nikokwe). The line is reported (1917) to have been continued to Mtarika. All telegraph stations mentioned by name are given below, but there are said to be others, probably at intervening posts.

miles

0

**Port Amelia**, on the eastern shore of Pemba or Pomba Bay.

For the first 18 m. the route passes round Pemba Bay on the S., for about 3 m. over coral formation. After this the bay is fringed mostly by salt-pans and mangrove swamps, and the going is better along the foot of the low hills to the S.

It is believed that some road-making has been recently carried out in this locality.

Mwambi, landing-place on W. side of Pemba Bay, is N. of mouth of the Mwagidi. See Route 15.

**Mtuge** ; Portuguese post (established 1913) in this neighbourhood.

18

Route now leads up the valley of the **Mwagidi** or Muhagide. Fertile and well-cultivated district, the principal crops being maize, millet, ground-nuts, beans,

miles

and cassava, with many others : coco-nut palms and fruit trees.

33 Here the railway route crosses, and for some distance follows the course of the Mwagidi. In this neighbourhood a village called **Nyambabwa** is mentioned on the Mwagidi. Alt. about 200 ft.

After this the general upward slope of the country becomes steeper : in about 10 m. a height of 750 ft. is reached, after which the ascent becomes more gradual. The sharp rise, according to the railway survey, begins at m. 34. (Railway route crosses the Mwagidi at m. 47, alt. 650 ft.)

60 **Ankwabe** (Mkwapi). Portuguese post and telegraph station, on N. side of the Mwagidi. Alt. 1,180 ft. Two days by mail-service from Port Amelia (1913). Important village at foot of high hill (Mkwapi Head) and near junction of **Nungonia** and Mwagidi rivers.

A native route NE. to Kisanga on Ibo harbour is reported to run from this point : it presumably joins Route 16 from Meza (m. 90, below).

Route ascends gradually, reaching at m. 81 an altitude of 1,560 ft. ; thereafter it descends again.

(NOTE.—According to Spilsbury's itinerary, the distances by the route he followed are considerably greater than appears from the railway survey. He places Mkwapi 53 m. from Mwambi, and therefore 71 from Port Amelia. Beyond Mkwapi, he gives Mperera, 81 m. ; Nkoma, 92 m. ; Meza, 106 m.)

90? **Meza**, Portuguese post and telegraph station. Alt. about 1,300 ft. Four days by mail service from Port Amelia (1913).

The country beyond this point is fairly watered and fertile, cultivated in wide belts round the villages ; intervening woods fairly open ; timber indifferent owing to practice of burning off trees.

Route 16 joins from Ibo and Kisanga.

miles

At least two routes have been followed from here to the Mtepwezi valley. The railway survey, approximately along the line of the route most usually followed, ascends gradually over undulating country, reaching 1,580 ft. at m. 99 and 1,772 ft. at m. 108, up to a pass between the lofty peaks of Kirimba (N.) and Nibua (S.), the pass being at an altitude of nearly 1,800 ft.

126

**Montepuezi**, Portuguese post and telegraph station, near the r. bank of the river Mtepwezi or (as it is written in Portuguese) Montepuezi. Six days by mail service from Port Amelia (1913); 11 hrs. marching time from Meza (1901).

This post was established in 1914 : previously there was a post named after the village of **Mwiri**, in the neighbourhood, and there was also a post named **Medo**, which was removed from a site on the l. bank of the river which was found unhealthy. A European settlement has been established in this locality for the cultivation of kapok, &c. Fine hills approach the river closely, and the routes do not run close to the stream, but turn SW. and run parallel to and at a few miles from it. Clay soil : dense vegetation. Track improves after Montepuezi, and route proceeds through a populous region cultivated with millet, maize, and fruit trees ; water more abundant. Several villages are passed : the authority of 1899 notes the important village of **Negira** about m. 141. Beyond this route follows the valley of the **Muhubwa**, a r.-bank tributary of the Mtepwezi running SW. and NE., enclosed between the Msilala hills to NW. and the Mwapi hills to SE. : vegetation remarkably luxuriant and good water-supply.

154

**Mwalia**, alt. 1,770 ft. Seven days by mail-service from Port Amelia (1913), 11 hrs'. marching time from Montepuezi (1901). Portuguese post, situated in the

miles

plain of the Muhubwa. Telegraph station. See Route 18 (A), m. 303.

Route crosses the Muhubwa (alt. 1,670 ft.), and proceeds NW. over hills between Muhubwa and Mtepwezi valleys, reaching at m. 160 an altitude of 1,940 ft.

168 Crossing of the **Mtepwezi** river. Alt. 1,690 ft. Valley fairly populated. Bamboos. To S. is seen the remarkable gable-ended mountain of Makwa, estimated at 3,000 ft. in height.

172 **Mavala**, Portuguese post. Alt. 1,770 ft. Eight days by mail-service from Port Amelia (1913).

Beyond the limits of the Mtepwezi valley the country becomes rather broken and less populous, and water is scarce. Descent to a general elevation of about 1,600 ft. : moderately good track.

201 **Msalu** river and Portuguese post. Alt. 1,430 ft. Ten days by mail-service from Port Amelia (1913). Fertile and fairly populous valley. High rocky banks mostly covered with dense foliage.

Most authorities agree that there should be running water in the Msalu, even in the dry season; but the river has been found dry. Flood-marks 25 ft. above river-bed.

From this point on to Mtarika, tsetse-fly has been observed (see p. 33).

Route proceeds, at first, ascending gently over a plain broken by abrupt isolated rocky hills, which offer no obstruction. Uninhabited country, with thickets, scattered trees, and bamboo brakes, through which the path winds. Many monkeys.

Route then approaches and ascends a pass (highest point on railway survey, 2,130 ft.) through the chains of hills which bound this part of the basin of the Msalu on the NW. Track indifferent towards

230 **Kisanga** (not to be confused with Kisanga on the

miles

coast), a village noted by several authorities as an important point on the route, and indicated on the railway survey of 1912. In this neighbourhood the Portuguese established a post called **Lucinje** in 1913. There was formerly a post here called **Iaparata**, 25 hrs'. marching time from Mwalia (1901).

Kisanga (or Kisanga Head) is described by the authority of 1900 as situated on a saddle in a well-watered valley. High broken ground to N. (Kisanga Mts.) and S., with rocky outcrops of fantastic form.

(NOTE.—The authority of 1899 states of Kisanga that it is the only village in the district, and important as the point of junction of routes to Mtarika and the west, (a) from Port Amelia, as here described, and (b) from Ibo and the north. No other evidence of a route from Ibo has been found, apart from that which joins the present route much earlier (see m. 90, above), but nothing that is known of the character of the country would render improbable the existence of a more northerly and independent route from Ibo to Kisanga.)

To the S., as the route proceeds, rise the **Chawo** and **Chengwari** Mts., with a general elevation of 2,700 ft., and higher summits, such as the spire-shaped **Manjera**. The elevation of the route decreases generally, but there is a succession of slight ascents and descents, as the route crosses a succession of water-courses tributary to the **Namwala** river. Beyond a point about 15 m. from Kisanga, water is said to become scarce, and this was given to the authority of 1899 as a reason why the country is without inhabitants. He believed, however, that water could generally be had by digging. Forested country.

274

Crossing of **Msanjizi** (Msangwa ?) river (alt. 1,480 ft.),

- miles | 12½ hrs'. marching time from Kisanga (Iaparata : 1901).
- 285 | Crossing of the **Rariko** or Lureko river (alt. 1,430 ft.), the basin of which has been reported rich in gold. It is a tributary of the Lujenda. (See Route 19, m. 116.) Three hrs'. marching time from Msanjizi river (1901).
- | The head-waters of other tributaries of the Lujenda are crossed (the route undulating considerably), and about m. 305 the cultivated zone of the Lujenda itself is entered. Manioc, millet, tobacco, &c. Increasingly dense population as the river is approached, with many villages.
- 323 | **Mtarika.** (See Route 19, m. 187.) Alt. 1,476 ft
- | The Portuguese post and telegraph station of Mtarika is reached by crossing the Lujenda (native boats). Seventeen days by mail-service from Port Amelia (1913) ; 9½ hrs. from the Rariko (1901).

## ROUTE 31

### PORT AMELIA—LURIO, 47 miles

*Authorities* :—Maples, journey of July–August, 1881 ; *Boletim da Companhia do Nyassa*, passim ; Vilhena's map, 1904 ; *Africa Pilot*, part iii, 1915 ; Admiralty Chart, no. 1809, 1884–1915.

This route approximately follows the telegraph-line between Port Amelia and Lurio. There is reported to be a made track (*estrada*), but whether exactly along the line given below is not known. Going is heavy in parts, over sandy soil.

- miles |
- 0 | **Port Amelia.** For about 5 m. the E. side of Pemba Bay is followed, as in Route 30. General direction then continues S., the route passing numerous villages and crossing water-courses in addition to those men-

miles

tioned below. The route, as followed by Maples, at more than one point ran over the firm white sand of the sea-shore. Elsewhere there are quicksands, or unhealthy mangrove swamps fringe the sea. Coconut palms, &c., are met with.

8      **Ushanga** or Changa. Low coast, with trees almost down to water's edge. Numerous villages.

13      **Mrebwe.**

14      **Npulu.**

15      **Ngome.**

17      **Utango** stream, having its mouth to S. of James Point.

19      **Zekapa.**

22      **Ngomemi** at mouth of **Munangage** stream, which is crossed.

27      **Hanwe** stream ; **Mrigwerigwe** village beyond it.

31      **Mkufi** stream : beyond it, near the mouth, Portuguese post of **Mkufi**, established 1905. Village on high ground : provisions and good water obtainable. Palm plantations, alternating with level and almost treeless plains, in this locality.

40      From this point onward to Lurio a number of villages are passed.

43      Cross **Mkaluma** (Mgaruma) river.

47      **Lurio**, a small settlement on N. bank of the Lurio river (see Route 32), with Portuguese post of Lurio (on an island ?), established 1898.

## ROUTE 32

## LURIO—MWALIA, 130 miles (?)

*Authorities* :—Maples, journey of July 1881 ; *Boletim da Companhia do Nyassa*, passim ; Vilhena's map (1904) ; *Africa Pilot*, part iii, 1915.

The **Lurio** river, which forms a great part of the southern frontier of Portuguese Nyasaland, discharges into Lurio bay, an open indentation protected only on the S. by **Sorisa** point. The shores are low, with thick jungle. The river has a bar at the mouth which can only be crossed by small craft.

On the N. bank is the settlement of Lurio, with the Portuguese post of the same name. (See Route 31, m. 47.)

Very little is known of the river and its valley. The route taken by Maples (from Mwalia eastward) lay north of the river until he descended to its banks some 17 m. above the mouth. Here he found it (in July) flowing in a number of channels over a bed of yellow sand about 1 m. wide, and forming many islands.

Route then leads WNW., and afterwards generally W. by N. Some dry river-beds (July), but in the rains these and the Lurio are doubtless full-flowing and rapid, for it is mentioned that at times the Lurio water discolours the sea for some miles out from its mouth.

At m. 46 Maples mentions **Mwigama** village, in fairly fertile country.

In this neighbourhood is the Portuguese post of **Chiure**.<sup>1</sup>

Route then traverses forested country for many miles, gradually ascending. Stunted trees ; supplies scarce. About m. 100 (?) Maples mentions the **Mkaluma** (Mgaruma) river :

<sup>1</sup> This is one of a chain of Portuguese posts extending S., SW., and WSW. from the Mwangidi at Ankwabe (Route 30, m. 60) to the Lurio. These, with the date of their establishment, are Pomune (1909), S. of Ankwabe ; Chiure (1912), SW. of Pomune ; Ucuia (Ukwa, 1912), WSW. of Chiure, near the Lurio ; Mloko (1912), WNW. of Ucuia ; Namano (1913), WSW. of Mloko and S. of Mwalia ; Mauripo, on the Lurio, SW. of Mwalia. All were in occupation in December 1916.



he found it here represented in July by a bed full of boulders, partly dry, but with deep pools with good and abundant water. It enters the sea a little N. of the Lurio. (Route 31, m. 43.)

At some 20 m. from Mwalia fertile country and villages may be met with : bananas plentiful.

The total distance to **Mwalia** (where Route 30 is joined, at m. 154) is estimated by Maples at 152 m., but this appears to be in excess ; the actual distance may be about 130 m. He occupied twelve marching days, but estimates his distance on two of these together at 8 m. only, and on no single day at more than 20 m.

## ROUTE 33

### NOTE ON THE COUNTRY BETWEEN THE UPPER COURSES OF THE LURIO, MSALU, AND LUJENDA, AND LAKE SHIRWA

No information has been obtained which enables any satisfactory itineraries to be laid down through this portion of Portuguese Nyasaland. There are, however, some Portuguese posts, mostly of recent establishment, namely (from N. to S.) :

(1) Metanda (1912), on the S. side of the Msalu basin.

(2) and (3), on a line SE. from the post of Lago Amaramba (see Route 39, m. 77), two posts—Luleio (1913), apparently rather more than half-way between Lake Amaramba and the Upper Lurio, and Anguros (1910) on the Lurio itself.

(4) Mahua (Mawa, 1907), half-way between Anguros and Metanda.

(5) Matias (1910), due E. of the post of Mekanheles on Lake Shirwa (see Route 39, under m. 111), and about 36° E. long. (?).

Lastly (6) Kwamba, ENE. of Matias, to which routes are mentioned leading from Route 39 (the Upper Lujenda, Lake Amaramba, &c.) at m. 77 and m. 111 (c). See Route 40.

There is also a route between Mekanhelas, Matias (?), and Kwamba. This post is the chief seat of the *concelho* of Amaramba, and is said to be a trade-centre of some importance.

The dates given above are those of the establishment of these posts, and with the exception of Metanda and Mawa they were in occupation in December 1916.

A short description of an expedition by two Europeans and 79 natives through part of this region in 1902 furnishes a few particulars. L. H. L. Huddart in 1906-7 passed through the region from the upper Msalu to the upper Rariko, and thence SE. nearly to the Lurio, SW. to Kwamba, and NW. to Lake Amaramba, but his detailed report has not been available for the purposes of this handbook. The railway survey of 1912, returning from Mluluka to Medo (Mtepwezi valley: Route 30) followed approximately the watershed dividing the basins of the Lujenda and the northern rivers from that of the Lurio.

From these authorities and other incidental references it is gathered that along the divide there is a certain amount of broken country, but on the whole it does not seem difficult to traverse, inasmuch as the railway surveyors thought it possible that the watershed would provide a better railway route from E. to W. than that followed further N. (Route 30), the country being less cut up by valleys, and the slope from the watershed down to the Lujenda at Mluluka not being heavy.

Much of the region is sparsely inhabited, if at all. Considerable parts, at least, are thickly covered with bush. The expedition of 1902, marching generally ESE. (?) from Mluluka (Route 36, &c.) to the Mawa district,<sup>1</sup> passed through entirely uninhabited country, covered with small trees and bush, often very dense, through which it was necessary to blaze a path. On the other hand, there is little undergrowth between the lakes of the upper Lujenda and the Lurio (compare Route 40 under m. 9).

<sup>1</sup> This expedition marched 116 m. from Mluluka to Nevaga, the chief village of Mawa, a point not otherwise located, but said to be 3 days' march from the Lurio, 5 from Mtariika, and 7 from Mluluka.

The railway surveyors passed through the region in the wet season, and plenty of water was obtainable. In the dry season there might be some scarcity : in January, the expedition of 1902 found rivers dry or very low, but a fair supply of water was met with at various points, and it is probable that water could generally be obtained by sinking wells 10–20 ft. deep.

## ROUTE 34

### MTARIKA AND THE UPPER LUJENDA—MWEMBE—UNANGU

*Authorities* :—Terry, 1899 ; *Boletim da Companhia do Nyassa*, passim.

It is reported (1917) that a made track (*estrada*) exists between **Mtarika** and **Mwembe** (Fort Valadim). The mail-service between these points in 1913 occupied two days, and the direct distance appears to be between 50 and 60 m. There is nothing in the physical character of the country to make the existence of such a route doubtful, but no detailed account has been met with. General direction W.

An alternative would be to proceed up the Lujenda to the confluence of the **Luangwa** (Route 36, m. 52.) The authority of 1899 followed two routes between this river and Mwembe.

(1) From the confluence of the Luangwa and Lujenda a route was followed (in the reverse direction) which led up the **Lawitzi**, a tributary of the Luangwa which joins that river close above its mouth. This stream, which rises W. of Mwembe in the **Maolo** hills, passes through Mwembe, and between Mts. **Mwembe** and **Lisali** and S. of Mt. **Mbampa**, was reached at m. 16 and thereafter crossed several times. The route reached **Kamizonde** at m. 38 and **Mwembe** at m. 49.

(2) Coming from S., the authority crossed the Luangwa higher up (distance from mouth not stated), finding the crossing more difficult here than at the mouth (Route 36, m. 52), owing

to rapid current (August) and rocky bed. Route proceeded by Mt. **Lisali**, 12 m. to Mwembe, 22 m. from the crossing.

(The total distance between Mwembe and **Mluluka** by this route is given as 37 m.: this suggests an underestimate, even if Mwembe at this time were situated considerably S. of the present Fort Valadim.)

Country generally fertile and populous, especially near Mwembe. Manioc, tobacco, cotton, sweet potato, castor oil plant, beans, &c.

From **Mwembe** (Fort Valadim) to **Unangu**, again, there is evidence that a route exists, but no account has been met with. The distance may be about 35 m., and the route has to pass over the **Ajawa** or Yao hills, between the basins of the Lujenda and the **Luchulingo**, in which Unangu is situated (see Route 23, &c.). Between Mwembe and Unangu is situated the recently established Portuguese post of **Mtamira**, which in December 1916 was in charge of a constructor of roads.

The Nyassa Company recently had the intention of constructing a motor road from the coast to the lake at Mtengula by way of Mtarika, Mwembe, Unangu, and Chisindo (i. e. the post route). The evidence is conflicting as to whether such a road is actually being constructed.

## ROUTE 35

### UNANGU—MTONYA, 47 miles

*Authorities* :—Universities' Mission to Central Africa (*Likoma Diocesan Quarterly*), 1906 ; Maples, September 1894 ; verbal information, &c.

There are several paths. That most frequented (in 1906) goes close under Jambi hill on its W. side. Another goes farther W. of the hill, and a third round the E. side of it, where there was a village. The route is easy and pleasant, through well-watered forest country with plenty of shade, easy gradients,

and no large rivers. General direction SSW. Bicycles have been used over considerable parts of the route.

NOTE.—This route is said to have been slightly altered since 1906 from the line indicated below.

Hours		
Total	Inter- mediate	
0	0	<b>Unangu.</b>
2 $\frac{3}{4}$	2 $\frac{3}{4}$	<b>Luchimwa</b> river, flowing E. to the Luchulingo (Locheringa), as do other streams in this district. A later authority (1913) indicates a bridge over the Luchimwa, 8 m. SSW. of Unangu on the route to Mtonya.
		Seven miles beyond this point, route passes under <b>Jambi</b> hill.
5 $\frac{1}{2}$	2 $\frac{3}{4}$	Small stream.
6 $\frac{3}{4}$	1 $\frac{1}{4}$	Good river (? <b>Usinyando</b> , crossed by Maples in this neighbourhood).
7 $\frac{3}{4}$	1	<b>Liumba</b> stream.
9	1 $\frac{1}{4}$	<b>Lukwese</b> river, with large boulders.
9 $\frac{3}{4}$	$\frac{3}{4}$	Good stream.
10 $\frac{3}{4}$	1	Fair stream.
12	1 $\frac{1}{4}$	Good stream.
13 $\frac{3}{4}$	1 $\frac{3}{4}$	<b>Lungwena</b> river, a considerable stream flowing SE. to the Luambala.
15 $\frac{1}{4}$	1 $\frac{1}{2}$	<b>Nyalanji</b> river.
15 $\frac{1}{2}$	$\frac{1}{4}$	<b>Mtonya</b> , mission station and Portuguese post. Alt. 3,630 ft. The name is properly that of the central hill of a range which runs for 5 m. in an elliptical curve E. and W. The extreme elevation was estimated (by Maples) at 5,000 ft. The country to S. is mountainous or hilly, in contrast with the generally level surface to the N. Scattered settlements extend 2 or 3 m. along the route from Unangu, and for a considerably greater distance S. For routes from Mtonya, see Route 37.

## ROUTE 36

## THE MIDDLE LUJENDA RIVER

## MTARIKA—MLULUKA, 67 miles

*Authorities* :—Last, 1885-7 ; Terry, August 1899 ; Gueit, December 1899-January 1900 ; Spilsbury, September-October 1900 ; Branco, October 1901 ; Stevenson-Hamilton, July-August 1908 ; Railway Survey, 1912.

The authorities quoted all followed the r. bank of the Lujenda upward for at least 50 m. There is, or has been, a route along the l. bank ; about 1903-4 it was unsafe and unused, caravans following the r. bank, and no detailed description of it is found. Beyond m. 40 one authority states that it is well watered and populous, and contrasts the r. bank with it unfavourably. Along the route described below marshes and swollen tributary streams may be encountered in the wet season : in the dry season many of the smaller streams dry, but the Lujenda itself is perennial. As will be seen, there are alternative tracks for at least part of the route, and one report speaks of three tracks in all. Perhaps (though there is no definite statement) there are wet-season and dry-season routes, the first crossing the tributaries some distance above their confluences (where some are certainly unfordable when full), and the second keeping close to the main river, when the tributaries are in great part dry.

The natives are reported (1901) to accept both beads and cloth.

The distances over this route agree, as between the various authorities, fairly well : the total distance according to the railway survey is 63 m. General direction, SW. to SSW.

miles

0

**Mtarika**, alt. 1,476 ft.

For the first 37 m. two routes have been followed, one (A) keeping close along r. bank of river, and the other (B) on rather higher ground some 7 m. (at most) from it. (Village-names are mostly as in 1900-2.)

miles

## (A)

The riverside route crosses the **Mkuti** stream at m. 6, and the **Ingwen**a at m. 9½, passes **Iman** hill and **Walamalemba** at m. 14, crosses **Kiringa** stream (alt. 1,640 ft.) at m. 15½, and reaches **Kerikwaka**, m. 18½, alt. 1,570 ft., crosses **Lutizi** stream about m. 24, passes between the Lujenda and Mt. **Livambo** to S. about m. 29, and reaches the **Msangula** stream at m. 33. Alt. about 1,740 ft. Just before this an earlier authority places the village of **Mlumbwa**.

## (B)

The upper route, striking away from the Lujenda directly from Mtarika, passes **Karikombi** (or **Kakumbi** ?) villages between m. 6 and 10. This position is mentioned by the authority of December 1899, as lying at an altitude of 1,870 ft., and having a more agreeable climate than the valley below, and a particularly good water-supply.

Route then crosses the **Mkuti** a little farther on, passes **Mtende** at m. 17, crosses the **Kiringa** and reaches **Mongwa**, m. 21, crosses the **Lutizi** and reaches **Kiniani** (alt. 1,690 ft.), m. 29 (other authorities give Mponda or Cheponda in this neighbourhood, 7 hrs.' marching time from Mtarika), passes S. of Mt. **Livambo**, and joins route (A) on the **Msangula** at m. 36.

After m. 10, the country was found in 1899–1900 decreasingly populous, though still cultivated.

Mileage continued by Route (B).

36

**Msangula** stream, the southern boundary, in 1900, of Mtarika's country. Traces of copper and much iron are reported in this country; the iron lodes, becoming more numerous towards Kipota, have been found to render compasses useless.

miles

- 40      **Kipota**, alt. 1,750 ft., and small stream of same name. Other authorities name the village here **Kinunga**. 10½ hrs.' marching time from Mtarika. One authority found, in August, that whereas the water of the Lujenda below this point was clear and good, it deteriorated gradually up stream.
- 47      **Ngweweni** (Ndwini) stream is crossed. Alt. 1,790 ft. (From this point to the Lwiati stream, m. 53 below, an earlier authority gives a distance of 18½ m., but the march of the authority of 1908 was only 2 hrs., and the railway survey gives a distance of 6 m.)
- 51½      **Lukulezi** stream is crossed.  
In this neighbourhood authorities of 1899 and 1900 mention a village of **Ngombo**, and above it there is a ford over the Lujenda, used by them in August–September. Large islands.
- 52      **Luangwa** river joins the Lujenda on l. bank. It is a considerable stream, flowing sometimes in a broad open channel, and at other places dividing and forming small islands. No rocks in the lower part, but the banks are sometimes steep and terraced by successive floods, and a ford must be chosen with care (August). The Luangwa was forded near its mouth in August 1899 by mounted men and guns: infantry crossed on a bridge of trees. In the rainy season the river would be a serious obstacle. Good water. Fertile country with clay soil: cultivation of manioc, sweet potato, &c.; *masuku* trees.  
The l. bank of the Lujenda may be followed to the Luambala from this point: the r.-bank route (below) offers alternatives, one close along the river, the other a short distance back from it. Rolling country with stony ravines: game plentiful.
- 53      **Lwiati** stream is crossed. Alt. 1,800 ft.
- 54      **Mkwenda**. The other route passes **Paluma** (1908) and crosses the Lwiati about m. 57.



miles

67

**Mluluka**, alt. 1,900 ft. Portuguese post established 1908; in occupation in December 1916. Called **Luambala** in some earlier authorities: not to be confused with Mluluka on Lake Nyasa. It lies in the angle formed by the confluence of the Luambala (from SW.) with the Lujenda (from S.). It is therefore reached by the r.-bank route up the Lujenda by crossing that river, and by the l.-bank route by crossing the Luambala. The Luambala has steep banks and a rocky bed, and crossing may be difficult in consequence. It carries plenty of water even in the dry season. The Lujenda above the confluence is about 150 yds. wide: it might be easily bridged on good rock foundations. The railway survey of 1912, having followed the r. bank from Mtarika, planned the crossing here in order to follow the Luambala valley. Alt. at crossing, 1,840 ft.

17½ hrs.' marching time (2½ days) from Mtarika (Branco).

## ROUTE 37

### MLULUKA (LUJENDA RIVER)—MTONYA AND LAKE NYASA

*Authorities*:—Terry, 1899; Spilsbury, September–October 1900; Branco, October 1901; Universities' Mission to Central Africa (*Likoma Diocesan Quarterly*, 1906); Stevenson-Hamilton, July–August 1908; Railway Survey, 1912, &c.

The routes followed by these various authorities do not coincide, nor is it possible to correlate them closely. Villages have frequently disappeared or changed position in this locality as elsewhere, and for the present route their names are practically valueless.

From **Mluluka** at the confluence of the Luambala with the Lujenda, route runs generally S. of W.

The country W. of Mluluka consists of high rolling plains and thickly wooded rocky ridges and isolated hills. The district in 1906-8 was under the important chief Katuri, most of whose villages were on the banks of the **Luambala**, in fertile country. This river, which is perennial, flows between steep and sometimes terraced banks in a wide bed full of granite blocks which make the crossings treacherous: mounted men in the expedition of 1899 experienced trouble through encountering deep holes in the river (August).

As already indicated, alternative routes have been followed. All appear to avoid proceeding close along the river-banks.

Branco's route in 1901 followed a Portuguese track 12 ft. wide, passing the villages of **Mkumbire**, 2 hrs.' marching time, **Msinje**, 7 hrs., and **Mariwangwa**, 10 hrs., and reaching **Katur** (Katuri) village, 16 hrs. from Mluluka; 48 m. according to the railway survey (below). In the neighbourhood is a Portuguese post. The route ascends fairly steadily, from 1,900 ft. at Mluluka to 2,950 ft. at Katur. A report of 1903-4 shows that there were both Portuguese and native tracks along this line, of which the former became disused and overgrown, as the latter passed through a more populous district with more active trade.

From Katur to **Mtonya** is 'a long day's march' (missionary report): 9 hrs. according to the authority of 1901. For Mtonya, see Route 35.

The route selected by the railway surveyors, starting from Mluluka, kept S. side of the Luambala, crossing the headwaters of southern tributaries of that river. It reached an altitude of 2,980 ft. at m. 46, and thence descended slightly to **Katur** village at m. 48. Thence bearing generally WNW. it crossed the Luambala (alt. 2,720 ft.) at the confluence of the **Lungwena**, an important N.-bank tributary which it followed upward to its headwaters near **Mtonya** (alt. 3,630 ft.) 83 m. from Mluluka.

The authority of 1908 followed a route to Katur still more to the S., not by the Luambala valley, but by that of the next important tributary of the Lujenda to the S., the **Msalala**.

This is a considerable river, with abundant water even in the dry season : very steep banks, terraced towards the mouth. The authority proceeded from Katur as in paragraph (4) below.

From **Mtonya** :

1. There is at least one easy route SW. to Lake **Nyasa** in British territory (cf. Route 38, a route from Lungwena on the lake to Mtonya). The routes to the Portuguese shore of the lake, on the other hand, are difficult.

2. The railway survey crossed the divide between the Lungwena (Luambala basin) and the **Liwesa** river (Nyasa basin), 5 m. from Mtonya, alt. 4,010 ft., and followed the latter river SW. nearly to the frontier, and then turned NW. to **Lipuchi** (alt. about 1,570 ft., on Lake Nyasa on the Portuguese side of the frontier : see Route 26, m. 164), passing through difficult country : 52 m. from Mtonya, 135 m. from Mluluka. High ridges between streams flowing to the lake.

There appears to be a track along or near this line from Mtonya to Lipuchi. On the river **Msinje**, about 8 m. SE. of Lipuchi and 3 m. within Portuguese territory, are the adjacent villages of **Mkanjira** and **Serimani** (1913). From Serimani a track leads S. by E. 8 m. to the frontier near the point where it crosses the Liwesa river. Along the frontier itself also there is a track.

3. The authority of 1901 followed another route directly NW. from Mtonya by a very bad track to **Mtule**, 2½ hrs., the **Msinje** river, 5½ hrs., and **Luangwa**, 12½ hrs. from Mtonya, near Port Arroyo, Lake Nyasa. (See Route 26, m. 155.)

Water plentiful and soil very fertile on both routes (2) and (3).

4. The authority of 1908 followed a more southerly route from Katur, not going to Mtonya, by paths described as 'appalling'. It led N. round **Msalala** peak and turned SW. to **Mazimbo**, alt. 3,025 ft., about 5 m. from Katur ; thence, frequently crossing headstreams of the Luambala basin, it ascended to the watershed under **Chekopo** hill (25 m.) at an altitude of 4,200 ft., crossed the frontier into British territory, and descended very steeply (about 2,600 ft. in 6 m.) by the

**Lukola** or **Ligola** valley S. to **Lake Nyasa**, reaching the lake-side road near **Malwesa**, 31 m.

5. Another route is mentioned in 1906 running S. from **Mtonya** over a rolling, well-watered, and forested plateau. It reaches the frontier near **Namizimu**, having apparently crossed the route mentioned under (4), above, as it reaches the frontier E. of the **Lukola**. At **Namizimu** it joins a road to **Fort Mangoche** in British territory. This route is not stated to be difficult. No particulars are given, 'because the path has altered much, owing to new villages being built in the neighbourhood of **Namizimu**'.

NOTE.—The authority of 1901, whose marching times are quoted above, occupied four days in all in travelling from **Mluluka** on the **Lujenda** to **Luangwa** on **Lake Nyasa**. He notes that the natives accepted beads rather than cloth.

## ROUTE 38

### LUNGWENA (LAKE NYASA)—MTONYA, 28 miles

*Authority* :—Universities' Mission to Central Africa (*Likoma Diocesan Quarterly*), 1906.

An easy route on the whole, with few very steep hills. It is, however, rough and stony in parts. On the earlier part of the route the water-supply is rather scanty during the dry season.

According to an authority of 1901 there appears to have been then a good cleared track 12 ft. wide between **Lungwena** and **Mtonya** : later it became disused and overgrown.

Hours		
Total	Inter-mediate	
0	0	<b>Lungwena</b> (Lake Nyasa, alt. about 1,570 ft.). This is in British territory, S. of the Portuguese frontier.
2	2	<b>Shupanga</b> , on <b>Lilote</b> river, in which there are only water-holes in dry season.

Hours		
Total	Inter- mediate	
2 $\frac{3}{4}$	$\frac{3}{4}$	<b>Swaswa</b> river : only water-holes in dry season.
4 $\frac{1}{2}$	1 $\frac{3}{4}$	The Swaswa here has water at all seasons.
5 $\frac{1}{4}$	$\frac{3}{4}$	Small stream.
5 $\frac{1}{2}$	$\frac{1}{4}$	<b>Lutwanjesi</b> river.
8	2 $\frac{1}{2}$	<b>Mtonya</b> , alt. 3,630 ft.

## ROUTE 39

### THE UPPER LUJENDA RIVER

#### MLULUKA—LAKE AMARAMBA

#### WITH BRANCHES TO THE FRONTIER, &c.

*Authorities* :—O'Neill, 1883-4 ; Last, 1887 ; Terry, 1899 ; *Boletim da Companhia do Nyassa*, passim, and other papers of the company (1913) ; Map of British Central Africa, 1 : 250,000, I.D., W.O., 1479, &c.

Both banks of the Lujenda have been traversed from Mluluka (Luambala confluence : see Route 36) upward to Lake Amaramba, but there are practically no details concerning the l. bank. The itinerary below follows the r. bank. As lower down the Lujenda (see Route 36, introduction), there appear to be at least two r.-bank routes, one near the river and another some distance E. of it. On both banks the river receives a large number of tributaries, both those named below and others, all of which must be crossed : the majority are probably dry or nearly so in the dry season, but in the wet season several of them may form serious obstacles. The water of the Lujenda, in the dry season, has been found muddy and unfit for drinking at the outflow from Lake Amaramba, and though it improves lower down it was not really good until below Mluluka.

The distances along this route are very uncertain, the

authorities differing greatly. The figures below are given for the most part according to the authority of 1899, but they are generally in excess of other estimates.

General direction, S. by W. to S.

miles

- 0      **Mluluka**, on l. bank between Lujenda and Luambala rivers.
- 14?    **Msulwizi**, one of the principal r.-bank tributaries of the Upper Lujenda. Though it has been seen almost waterless in the dry season, it has also been found too deep to ford, and with a dangerous current, in December.
- 26      **Lujiri** river. From here onward to Lake Amaramba the country is generally more level than hitherto, and the vegetation thinner.
- 37      **Landwe** river.
- 42      About opposite this point the **Luchimwa**, an important l.-bank tributary, joins the Lujenda.  
There is a route up its valley WSW. to **Luchimwa**, a Portuguese post established in 1909 and in occupation in December 1916, perhaps 25 m. distant. A track continues generally SW. up the main valley to Beacon No. 13 on the Anglo-Portuguese frontier, and thence into British territory to **Fort Mangoche**, &c.
- 51      **Lwiwio** river, found almost dry in August.
- 62      **Macatei** river.
- 65      **Likona** (Lukona) river, with water in dry season.  
On the l. bank, between this point and m. 69, the rivers **Lumbibino** and **Mandimba** join the Lujenda. From the Lumbibino a track (1913) leads generally WSW., crossing the Mandimba, and is presumed to join the route described under m. 69 below, leading up the Mandimba valley to Fort Mangoche. The Mandimba is a perennial stream.
- 69      In this neighbourhood the r.-bank route approaches (and the l.-bank route crosses) the Lujenda at its outflow from Lake **Amaramba**. Bed 80 yds. wide :

miles

stream in dry season (August–September) 30–50 ft. wide, 4–5 ft. deep, rapid ( $2\frac{1}{2}$ – $3\frac{1}{2}$  m.p.h.); muddy water, unfit to drink. Stiff perpendicular banks 12–15 ft. above water. Many crocodiles. Thick thorny bush on banks. There was here in 1899 the village and mosque of Zerafi, an important Yao chief.

A route, reported by the authority of 1899, branches W. and then S. from this point along the W. shore of Lake Amaramba for about 6 m. It then turns W. and crosses the river **Nyunyezi** (a southern tributary of the Mandimba: see below) about m. 19. Here are two pools near the river, one about 150 yds. long and 20 yds. wide, the other 100 yds. long and 23 yds. wide, connected by a short channel, both supplying good water and full of fish.

The route continues N. of Mts. **Lisemba**, **Ipune**, and **Unangu**, and at m. 38 reaches the **Mandimba** river at cataracts. In this neighbourhood was formerly the Portuguese post of **Tambalali**, established as the centre of the Amaramba *concelho*, but subsequently abandoned.

The route continues along the Mandimba valley, which is flat, and swampy in the wet season. It crosses the Anglo-Portuguese frontier near Mt. **Nambandi** (alt. 4,435 ft.) and ascends the Mangoche hills to **Fort Mangoche**, m. 43, in the centre of a plateau.

Route continues E. of Lake Amaramba over a level grassy plain, at some distance from it, as the **Litandi** river, which is crossed, forms swamps in its lower course, near the lake.

77

**Lago Amaramba**, Portuguese post beyond the crossing of the Litanda. Established in 1898 and formerly known as Fort Napulo.

miles

Branch route (reported 1903-4 as one of the two principal routes in the *concelho*) SE. to **Kwamba**, Portuguese post, perhaps 50 m. distant, established in 1908, and chief centre of the Lake Amaramba *concelho*. No details.

From Lago Amaramba route continues generally S. along the E. side of the fresh-water lakes Amaramba and **Chiuta**, through flat grassy country which in the wet season becomes an extensive swamp. Occasional palm-trees. Game abundant.

About m. 82 a route turns W., passing S. of Lake Amaramba by the **Nsumbiti** ford to the Lifuni valley in British territory, along which there is a track (partly passable for wheels?) W. and then NW. to Fort **Mangoche**, &c.

Continuing S., about m. 99 Beacon No. 11 of the Anglo-Portuguese frontier is reached, on the E. shore of Lake Chiuta. About m. 103 is a Scottish mission station.

111 **Tombwe** hill, some 4 m. from the SE. shore of Lake Chiuta. Good water-holes with fairly plentiful supply, said never to dry, at northern foot. Alt. here 1,707 ft.: the hill rises about 100 ft. higher. Villages with millet and cassava fields (1899). From here there are routes as follows:

(a) A route passable for wheels (?) S. and then SW. 15 m. to Beacon, No. 9 on the Anglo-Portuguese frontier S. of Lake Chiuta and the marshes at its head, proceeding thence in the direction of **Zomba**. From the beacon a path continues S. in Portuguese territory, E. of the eastern shore of the brackish Lake **Shirwa** or Kilwa and the marshes which fringe it. About 37 m. from Tombwe it reaches the Portuguese post of **Mekanelhas** (Mkanyela), and about



miles

20 m. farther on, near the SE. corner of the lake, it crosses the southern frontier of the Nyassa Company's territory, which runs E. by S. hence to the headwaters of the Lurio. The route then joins a road which crosses the Anglo-Portuguese frontier from Fort **Lister** in British territory. On this route, in August–September, good water is found only at Tombwe, in wells (Madziabango) near the frontier at Beacon No. 9, at Mekanhelas, Nassanje, and Nachuma. Many villages and cultivated country above the marshes.

(b) A route farther E. than the above, keeping to the hills through better-watered country, and passing Mt. **Malembwe** and **Mandoala** near to it, whence the road referred to above (Route a) runs to Fort **Lister**, &c.

(c) A route, apparently coincident for the first few miles with Route (b) above, generally ESE. to **Kwamba** (no details, but see introduction to Route 40).

(d) Another, longer, route to Kwamba, leading at first N. (see Route 40).

## ROUTE 40

### TOMBWE HILL—KWAMBA, 48 miles

*Authority* :—Capt. F B. Pearce, in *Geographical Journal*, vol. xv (journey of 1899).

This route is included for the sake of the general description of the country which may be gathered from it, in the absence of better information. But it is almost certainly not the shortest route between Tombwe Hill and Kwamba, which probably runs as stated in Route 39, note (c) under m. 111, E. by S. to the Mtumbi hills, and thence in the same general direction to the Mtamkulu river some miles above the point

where that river is crossed by the route detailed below ; a path connecting Kwamba and the posts of (Matias and ?) Mekanhelas is then joined, and followed to Kwamba.

miles	
0	<b>Tombwe</b> hill (see Route 39, m. 111). Path at first N. and NNE. over open country with clumps of stunted wood.
5	Water-holes.
8	<b>Mkloma</b> hillocks, eastern slope. Path turns E. and then generally E. by S.
9	Water-holes. There is gradually less open country, until the whole becomes thickly wooded save for occasional glades. Trees are generally 1 ft. 6 in.—3 ft. in diameter, 10–35 ft. high ; larger timber is rare except along banks of streams, where also there is undergrowth : elsewhere there is little or none.
12	Water-holes.
14	<b>Nangulukutuchi</b> hills, northern foot. These stand on the watershed between Lake Chiuta and the Lurio basin, which is otherwise rather ill-defined. Tsetse-fly from here to the Mtamkulu river (m. 39) in 1899. Gradual descent.
19½	<b>Matawapa</b> stream, a tributary of the Mtamkulu (m. 39), is crossed ; 30 ft. wide, banks 8–12 ft. high, overhung by trees. The stream is not perennial, but the bed carries large pools of indifferent water in the dry season.
25½	<b>Nchere</b> stream, a northern tributary of the Matawapa, dry in dry season. Path now trends SE. and S. Thinner forest towards Mtamkulu river ; open grassy glades more numerous.
39	<b>Mtamkulu</b> river, a l.-bank tributary of the Lurio, is crossed ; 60 yds. wide, with uneven rocky bed ; difficult and dangerous crossing in wet season. Alt. 1,718 ft. The river was not flowing in August, but water (plentiful, but neither clear nor very good) lay in large deep pools, between two of which the

miles

crossing was effected on a rocky ledge. Scattered villages along farther (S.) bank. Path turns E., beyond crossing, towards centre of Namwero hills.

43

Path bifurcates, both branches leading to Kwamba.

The left branch leads ENE. to the gap (3–4 m. wide) through which the Mtamkulu river flows between the Namwero hills and **Mtungwe** mountain. This isolated mountain mass rises abruptly to N. of the Mtamkulu ; its two principal summits are a peak (the height of which is doubtfully estimated at 9,000 ft.) and a lower flat-topped knob ; the sides are exceedingly steep, and on the south-east are bare precipices estimated at 3,000 ft. in height.

The path turns the northern end of the Namwero hills and reaches Kwamba at m. 57.

The right branch turns S. and crosses the **Namwero** hills, a range about 10 m. long, rising to 800 ft. above the surrounding plain. Small trees and bamboo thickets : bare summits. The gradients of the crossing are fairly easy except at two points.

48

**Kwamba**, alt. 2,142 ft. The position here referred to is that of the principal village of the chief Kwamba in 1899 ; the exact position, in relation to this village, of the Portuguese post established in 1908 is uncertain. The post is the chief seat of the *concelho* of Amaramba, and is said to be a trade-centre of some importance. The village lay under the southern slopes of the Namwero hills, in the valley of a small southern tributary of the Mtamkulu called the **Luzu** ; the valley is almost entirely shut in by the Namwero hills to N. and W., and by other hills to S. and E., rising to 1,000–1,200 ft. above the valley, with cliffs at some points. Water from holes and a small spring.

## APPENDIX

### LIST OF PRINCIPAL AUTHORITIES CONSULTED

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## ADDENDUM

This book was already in print when the following additional information, derived from Military Road Map of Southern German East Africa (Dar es-Salaam, May 1917, No. 215) and from a Portuguese Road Map (MS.) of the Lower Rovuma Region, was received :

TELEGRAPHS. To the lines mentioned on pp. 85–86 should apparently be added :

(4) *From Mazimbwa (Mocimboa) to Muidumbe.* The line goes SW. through Nambude and Enguri.

(5) *From Mazimbwa (Mocimboa) to Machemba.* The line goes WNW., apparently linking up with the Palma–Maziwa line.

(6) *From Mocimboa de Rovuma to Mwiriti.* The line goes S. through Madodo, Chomba, and Baomba.

(7) *From Mwiriti to Nanguar (on the Lujenda).* The line goes W.

ITINERARIES. *Route 1.* A road said to be fit for motor traffic follows the l. (north) bank of the Rovuma from the mouth up to Sasawara. Information respecting the length of certain sections of the road, and the number of hours taken by porters, is set out below :

miles <sup>1</sup>		Intermediate miles.	Distances hours.
13	Marunga		
20½	Chidya	10	—
29	Mayembe	9½	—
44	Mihambwe	20	10½
63	Kikumbiliro	31	7
73	Nkunya (Mkunga ?)	—	5
97	Nakalala	—	6
107	Lichehe	—	6½
120	Bangala	—	6½
131½	Marumba	—	6¼
144½	Mpotola	—	5

<sup>1</sup> The miles printed in this column are those given in the Itineraries.

*Routes 2 and 4. Ngomano to Sasawara*

The following route along the l. (north) bank of the Rovuma appears to be the same as Routes 2 and 4. The points given are, however, different, and the distances differ very considerably from those previously given.

miles <sup>1</sup>			Intermediate distances in hours.
A	B		
0	0	Ngomano	
5	9	Mkumbara, near Lukwika confluence	4½
17	24	Makochera, where the main route from Lindi joins that which runs along the Rovuma	6½
	35	Kitwanga, between the rivers Lume- sule and Mohezi	6½
	48	Lisenga, near the r. bank of the river Mohezi	5½
48	51	Mlwaro, on the r. bank of the river Msiniawe	3½
		Lijane	4½
		Mahutira, possibly the same as Mtotela	5
		Mbarapi	3¾
77	80	Mfunquu, on r. (south) bank of the Rovuma. In this neighbourhood is the Portuguese post of Undi	4½
		Jumbe Halifa	2
		Liquata	7
(135)	132	Sasawara, German fort	3½

Here the improved road along the Rovuma ends.

*Note on p. 125.* From Sasawara a track leads N. to Bibi Mataka (5 hrs.), where it meets the lower and less direct track from Songea to Tunduru. Bibi Mataka is the Bibi Kundenda mentioned by Suter (p. 126), and the route thence to Tunduru seems to be the upper road of which the same authority speaks. Beyond Tunduru it returns to the Rovuma by two branches,

<sup>1</sup> The mileage in column A represents distances as given in Itineraries, that in column B distances measured on German 1:360,000 map.

one of which joins the route given above at Mlwaro, the other at Lisenga (21 hours).

*Route 5. (a) Sasawara to Mitomoni (north bank of Rovuma)*

The following route runs much more closely to the l. (north) bank of the Rovuma than that given under Route 5.

Intermediate distances  
in hours.

Sasawara. Route crosses the rivers Sasawara and Mizola (Mirola ?)

Bwana Issa, on the r. bank of the river Msangesi- ? 5  
Mlukubwa (Msangesi-Mkubwa)

‘Pori Lg,’ E. of the river Msauesi 8

Makarani 7

‘Pori Lg’ 5

Camp on the r. bank of the river Ndewe 5

Camp on the r. bank of the river Msangesi-Mdogo 5

Tuhamba, on the l. bank of the river Lukimwa 5

Camp between the rivers Lukimwa and Lupambo 6

Route thence continues to German post opposite Mitomoni, about 30 miles, crossing the rivers Lupambo, Humbuti, and Mlongosi. No marching times are given.

*(b) Undi to Mitomoni (south bank of Rovuma)*

A track appears to exist south of the Rovuma from Undi to Mitomoni. The approximate distances are : Undi to Maziwa, 54 miles ; Maziwa to Macaloge, 39 miles ; Macaloge to Mitomoni (Portuguese post), 68 miles.

According to this authority Maziwa is situated SW. of Sasawara opposite the Mizola (Mirola ?) confluence. Macaloge is situated between the rivers Precamange and Usanyando, tributaries of the Rovuma. It is said to be in the Luchulingo valley, but the river of that name is not marked.



(c) *German-Portuguese Frontier from Mitomoni to Lake Nyasa*

There is evidence of a track running along the frontier line.

miles <sup>1</sup>		Intermediate distances in hours.
0	Mitomoni, German post	
	Kipingi	6
22	Chuhuru	5
	' Pori Lg ', at ford of river Kivindi	4
	Mahiko	6
35	Kivindi, on the lake shore	5

*Route 6 A.* A road said to be fit for motor traffic exists from Lindi to Masasi. At mile 38 it follows the south bank of the Lukuledi. Beyond Masasi the road lies to the north of the route described, and meets the Rovuma at Makochera.

*Route 8.* The alternative referred to at the beginning of p. 146 is a road fit for motor traffic as far as Mocimboa de Rovuma. It passes through Pundanhar (mile 33) and Machemba (mile 55). Beyond this point it follows approximately the route described in Route 13 (mile 134) and Route 14 B (mile 217).

*Route 13.* The road described is said to be fit for motor traffic all the way.

*Route 14 A.* A road said to be fit for motor traffic goes from Kisanga WNW. to Mwiriti (mile 115), thence N. to Baomba (mile 136½), Chomba (mile 158), and Mocimboa de Rovuma (mile 183). A telegraph line appears to run along this road from Mwiriti onward. North of the Rovuma the alternative through Newala, referred to under mile 210, appears to follow a better road than the one described. (Distance from Newala to Masasi 47 miles.)

*Route 17.* As was conjectured on p. 170 the route can be continued farther east. There is a road said to be fit for motor traffic from Mwiriti (Route 17, mile 36 ?) to Mazimbwa

<sup>1</sup> Distances measured on German 1 : 300,000 map.

(Mocimboa) which passes through Baomba, Mchilimba, Muidembe, Enguri, and Nambude (distance from Muidembe to Mazimbwa  $51\frac{1}{2}$  miles). See additional Route 42.

*Route 19* (p. 179). Further evidence favours the position of the Portuguese post of Nanguar at mile 67 rather than at mile 94.

*Route 21*. Tracks appear to exist from Maziwa to Luatizi, and from Maziwa to Nanguar.

*Route 25*. This route appears to descend to the shore of Lake Nyasa at Chivinde instead of near Ngofi.

ADDITIONAL ROUTES : *Route 41. Kisanga—Nanguar* ( $189\frac{1}{2}$  miles). From Kisanga to Mwiriti (mile 115) there is a road said to be fit for motor traffic. At Mwiriti the road turns N. to Baomba (see note on Route 14 A), but a track continues due W. over undulating, uninhabited country, with little water, to Nanguar on the Lujenda. A telegraph line appears to run along this track.

*Route 42. Mazimbwa—Mocimboa de Rovuma* (98 miles). A road, said to be fit for motor traffic, goes WSW. to Muidembe, thence turns NW. Telegraph lines follow the route from Mazimbwa to Muidembe, and from Chomba to Mocimboa de Rovuma.

miles

0	Mazimbwa (Mocimboa), on Mazimbwa Bay.
$23\frac{1}{2}$	Nambude, a Portuguese post.
39	Enguri, a Portuguese post.
$51\frac{1}{2}$	Muidembe. Route turns in a NW. direction. A road continues WSW. to Baomba and Mwiriti (see note on Route 17).
$73\frac{1}{4}$	Chomba. A road goes S. to Baomba and Mwiriti (see note on Route 14 A). Madodo.
98	Mocimboa de Rovuma, a Portuguese post. The position of the post is uncertain, but it appears to be a considerable distance from the r. (south) bank of the Rovuma.



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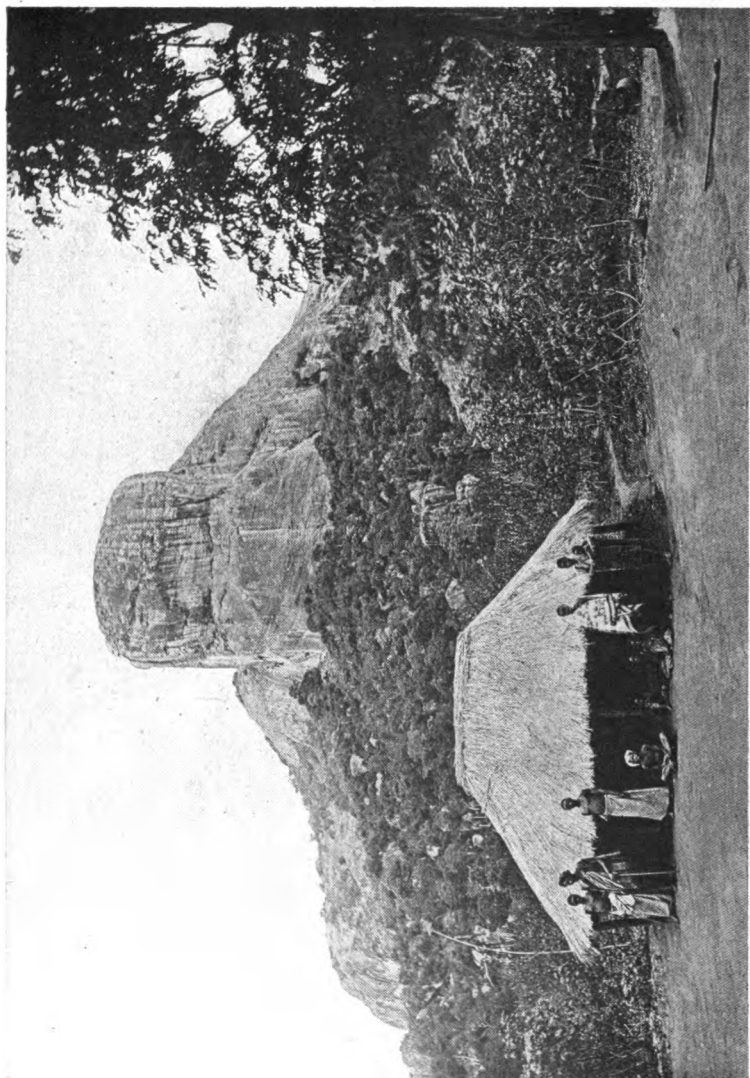
### PLATE

- I. View WSW. from Senkwa Mountain.
  - II. Senkwa Mountain. Makwa house and people.
  - III. Arm of the Rovuma, showing an island and hills of the south bank in background.
  - IV. South bank of the Rovuma at Mtwaro.
  - V. Undi, Mapanga Island.
  - VI. The Rovuma at Undi: native dug-out.
  - VII. Left (north) bank of the Rovuma near Undi.
  - VIII. Wood along left (north) bank of the upper Rovuma.
  - IX. Open forest on left (north) bank of the upper Rovuma.
  - X. Village of Mtira, upper Rovuma. Granary on right.
  - XI. Bandara Rapids on the upper Rovuma, above the Sasawara confluence.
  - XII. Bandara Rapids on the upper Rovuma, with Mount Kisungule.
- SKETCH-MAP, showing routes, Portuguese posts, &c., at end of volume.





VIEW WSW. FROM SENKWA MOUNTAIN,  
WHICH IS ABOUT 8 MILES N. OF THE ROVUMA AT M. 19 ON ROUTE 2

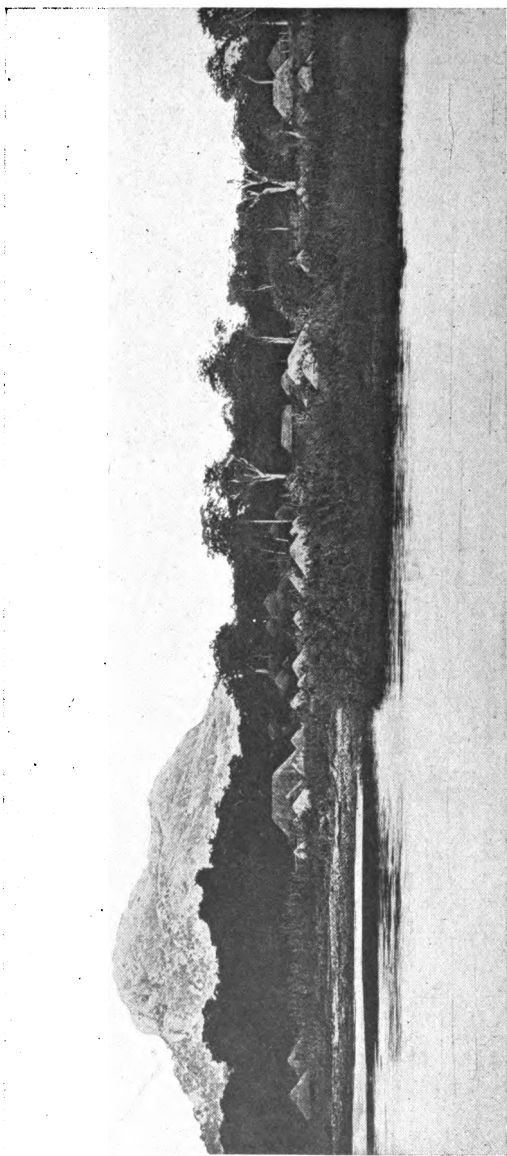


SENKWA MOUNTAIN (COMPARE PLATE I). MAKWA HOUSE AND PEOPLE



ARM OF THE ROVUMA, SHOWING AN ISLAND (? NANGALE, ROUTE 2, M. 43) AND HILLS OF  
THE SOUTH BANK IN BACKGROUND



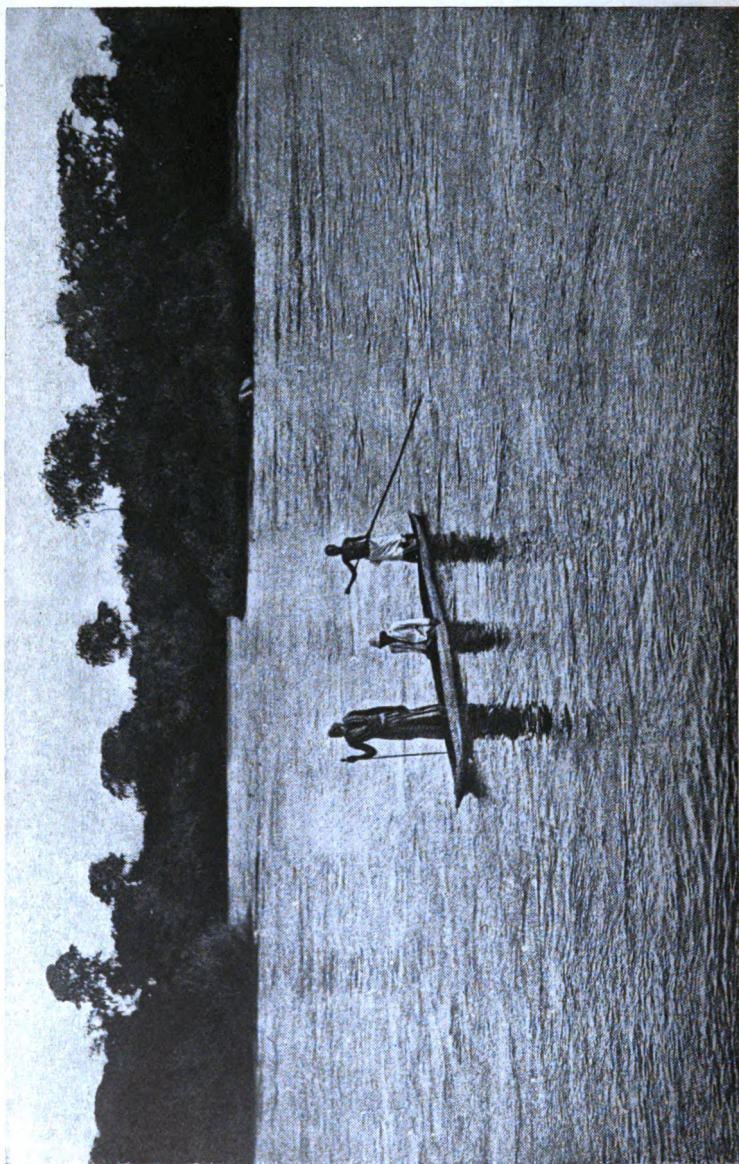


SOUTH BANK OF THE ROVUMA AT MTWARO (ROUTE 3, M. 45)



UNDI, MAPANGA ISLAND

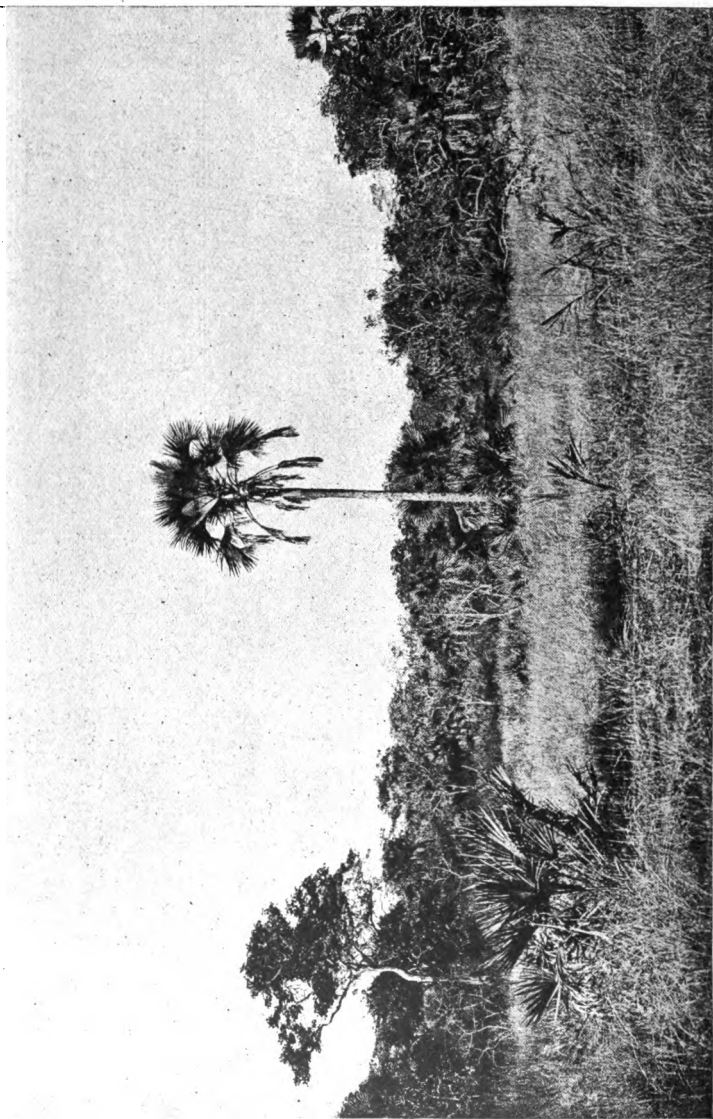




THE ROVUMA AT UNDI : NATIVE DUG-OUT



LEFT (NORTH) BANK OF THE ROVUMA NEAR UNDI



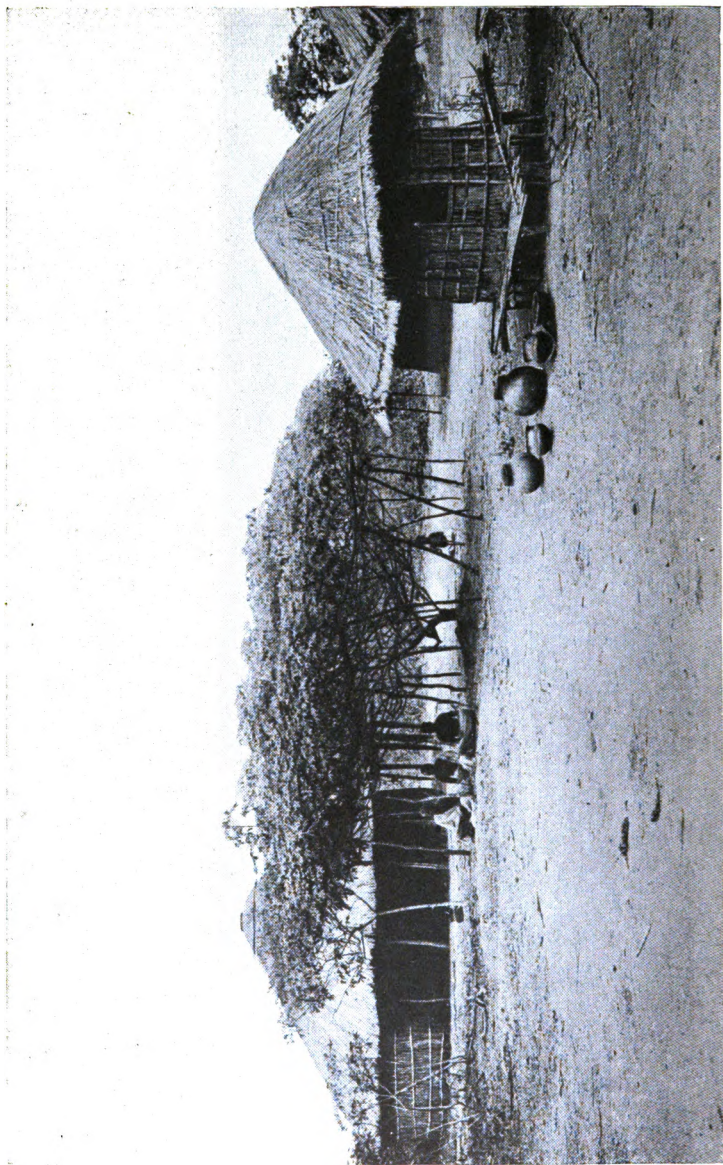
WOOD ALONG LEFT (NORTH) BANK OF THE UPPER ROVUMA (ROUTE 4)

PHOTOGRAPH TAKEN EARLY IN JUNE



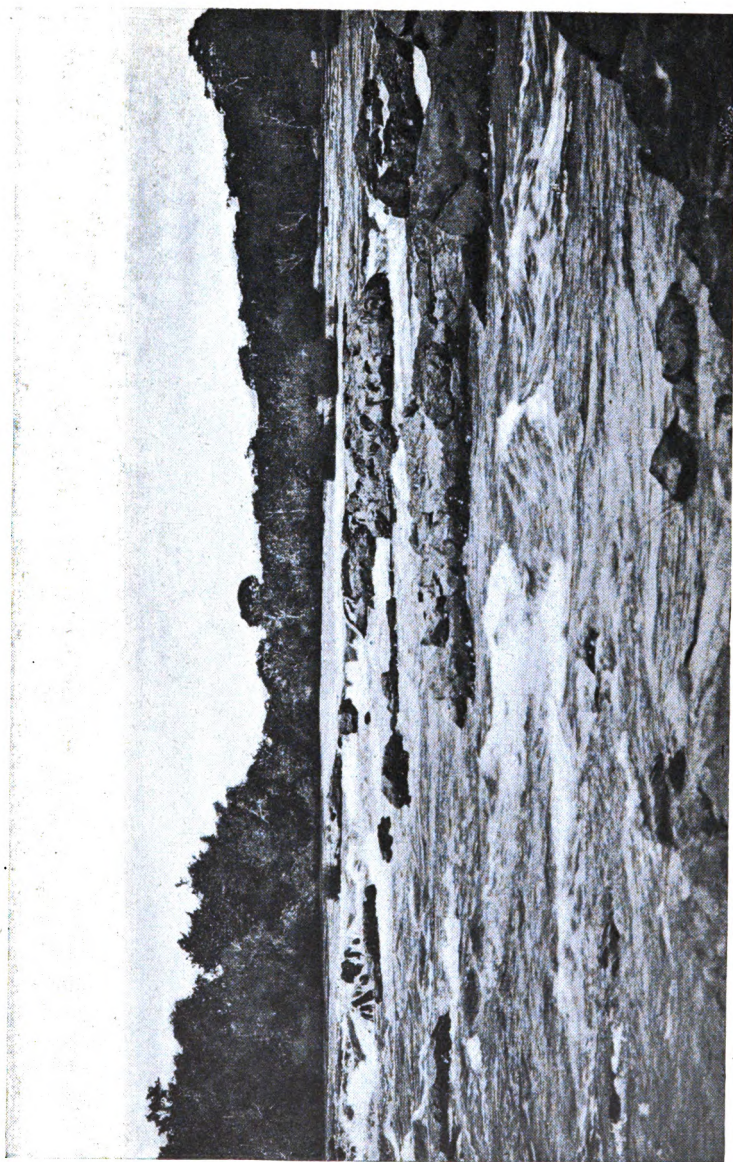


OPEN FOREST ON LEFT (NORTH) BANK OF THE UPPER ROVUMA (Route 4)  
PHOTOGRAPH TAKEN EARLY IN JUNE. GRASS BURNT OFF.

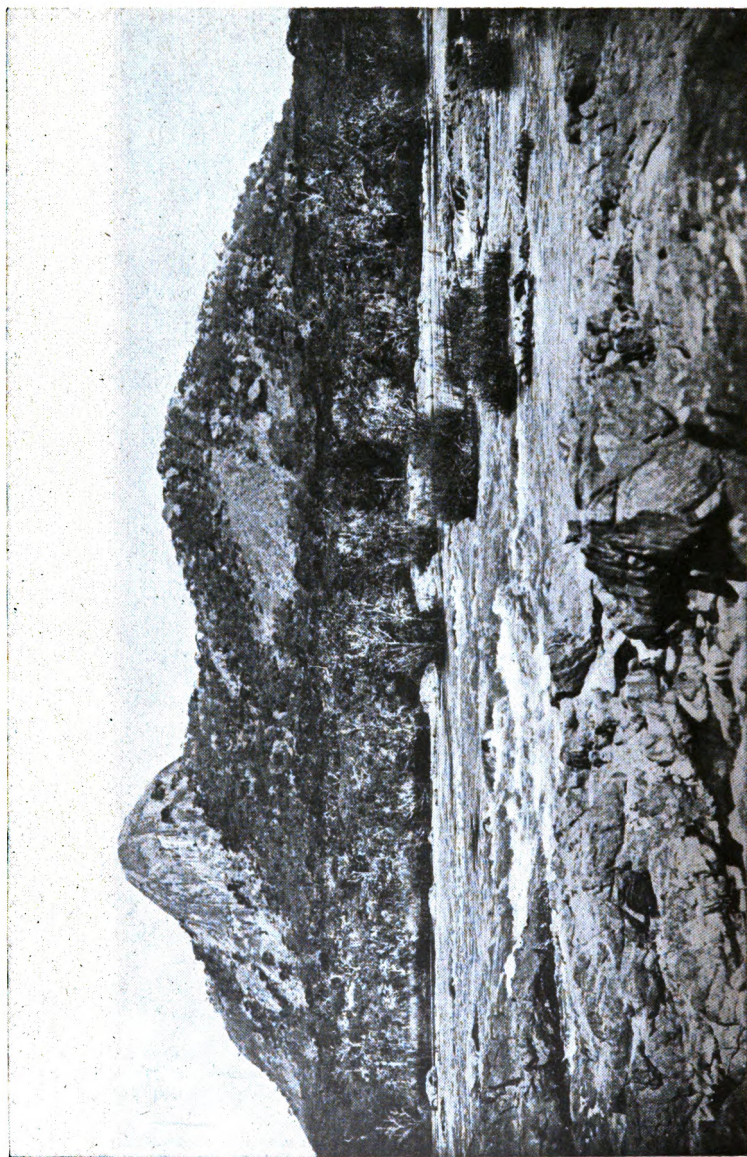


VILLAGE OF MTIRA, UPPER ROVUMA (Route 4, M. 56). GRANARY ON RIGHT





BANDARA RAPIDS ON THE UPPER ROVUMA, ABOVE THE SASAWARA CONFLUENCE (Route 5)



BANDARA RAPIDS ON THE UPPER ROVUMA, WITH MOUNT KISUNGULE (ROUTE 5)





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